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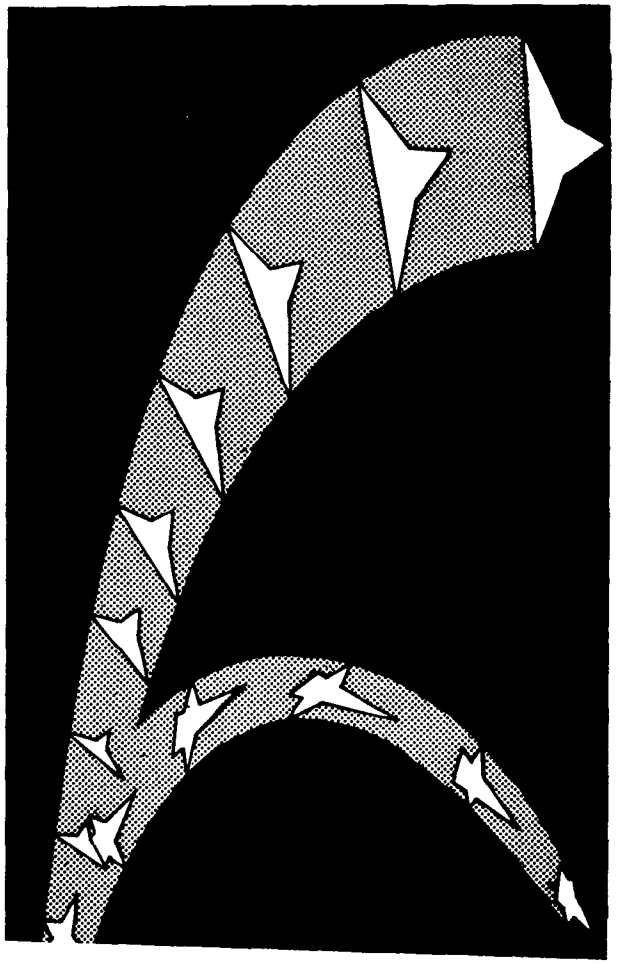

—SPACE SHUTTLE—

STATIC STABILITY AND CONTROL INVESTIGATION OF NR/GD DELTA WING BOOSTER (B-20) AND DELTA WING ORBITER (134D)

VOLUME I

by

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F.W. EDER, GD/C

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SONIC

Marshall Space Flight Center

SADSAC SPACE SHUTTLE
AEROTHERMODYNAMIC
DATA MANAGEMENT SYSTEM

NASA

CONTRACT NAS8-4016
MARSHALL SPACE FLIGHT CENTER

SPACE DIVISION CHRYSLER CORPORATION

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CR-119,994
VOLUME I
February, 1972

SADSAC/SPACE SHUTTLE

WIND TUNNEL TEST DATA REPORT

CONFIGURATION: Delta Wing Booster Alone (B-20) and With Delta Wing Orbiter (134D), 0.0035 Scale Model

TEST PURPOSE: Static Stability and Control Investigation

TEST FACILITY: NASA/MSFC 14 x 14 Inch Trisonic Wind Tunnel

TESTING AGENCY: North American Rockwell

TEST NO. & DATE: MSFC TWT 490; 4/15/71 through 5/5/71

FACILITY COORDINATOR: Mr. J. Weaver - NASA/MSFC

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ABSTRACT

Experimental aerodynamic investigations have been made on a .0035 scale model North American Rockwell/General Dynamics version of the space shuttle in the NASA/MSFC 14 x 14 Inch Trisonic Wind Tunnel. Static stability and control data were obtained on the delta wing booster alone (B-20) and with the delta wing orbiter (134D) mounted in various positions on the booster. Six component aerodynamic force and moment data were recorded over an angle of attack range from -10° to 24° at 0° and 6° sideslip angles and from -10° to $+10^{\circ}$ sideslip at 0° angle of attack. Mach number ranged from 0.6 to 4.96.

This document is the first of four volumes presenting the results of the MSFC TWT 490 test. The contents of each volume are indicated below:

Volume I - Delta Wing Booster

Volume II - Launch Configuration Piggyback Baseline

Volume III - Launch Configurations Piggyback, Belly to Belly and Incidence Variations

Volume IV - Launch Configurations Component Data Booster, Orbiter Build-up

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TABLE OF CONTENTS

	PAGE
Abstract	1
Nomenclature	4
Configurations Investigated	9
Test Facility Description	11
Data Reduction	12
Tables	
I Test Conditions	14
II Dataset Collation Sheets	15
III Dimensional Data	19
IV Index of Model Figures	26
V Index of Data Figures	27
Figures	
Model	28
Data	49

NOMENCLATURE

(General)

SYMBOL	SADSAC SYMBOL	DEFINITION
α	ALPHA	angle of attack, angle between the projection of the wind X_w-axis on the body X, Z-plane and the body X-axis; degrees
β	BETA	sideslip angle, angle between the wind X_w-axis and the projection of this axis on the body X-Z-plane; degrees
ψ	PSI	yaw angle, angle of rotation about the body Z-axis, positive when the positive X-axis is rotated toward the positive Y-axis; degrees
ϕ	PHI	roll angle, angle of rotation about the body X-axis, positive when the positive Y-axis is rotated toward the positive Z-axis; degrees
ρ		air density; K_g/m^3, slugs/ft^3
a		speed of sound; m/sec, ft/sec
V		speed of vehicle relative to surrounding atmosphere; m/sec, ft/sec
q	Q(PSI) Q(PSF)	dynamic pressure; $1/2\rho V^2$, psi, psf
M	MACH	Mach number; V/a
RN/L	RN/L	Reynolds number per unit length; million/ft
p		static pressure; psi
P		total pressure; psi
C_p	CP	pressure coefficient; $(p-p_\infty)/q$

NOMENCLATURE (Continued)

Reference & C. G. Definitions

SYMBOL	SADSAC SYMBOL	DEFINITION
S		wing area; m^2, ft^2
S	SREF	reference area; m^2, ft^2
$\bar{c}$		wing mean aerodynamic chord or reference chord; m, ft, in (see ℓ_{ref} or LREF)
ℓ_{ref}	LREF	reference length; m, ft, in.; (see $\bar{c}$)
b_{ref}	BREF	wing span or reference span; m, ft, in
A_b		base area; m^2, ft^2, in^2
c. g.		center of gravity
MRP	MRP	abbreviation for moment reference point
	XMRP	abbreviation for moment reference point on X-axis
	YMRP	abbreviation for moment reference point on Y-axis
	ZMRP	abbreviation for moment reference point on Z-axis

NOMENCLATURE (Continued)

Axis System General

SYMBOL	DEFINITION
F	force; F, lbs
M	moment; M, in-lb

Subscript	Definition
N	normal force
A	axial force
L	lift force
D	drag force
Y	force or moment about the Y axis
Z	moment about the Z axis
X	moment about the X axis
s	stability axis system
w	wind axis system
ref	reference conditions
∞	free stream conditions
t	total conditions
b	base

NOMENCLATURE (Continued)

Body & Stability Axis System

SYMBOL	SADSAC SYMBOL	DEFINITION
		Body Axis System
C_N	CN	normal force coefficient; F_N/qS
C_A	CA	axial force coefficient; F_A/qS
C_{A_b}	CAB	base axial force coefficient; $\left[-1\right] \left[(p_b - p_\infty)/q\right] (A_b/S)$
C_{A_f}	CAF	forebody axial force coefficient; $C_A - C_{A_b}$
C_n	CYN	yawing moment coefficient; $M_Z/qS\ b_{ref}$
C_ℓ	CBL	rolling moment coefficient; $M_X/qS\ b_{ref}$
		Common to Both Axis Systems
C_m	CLM	pitching moment coefficient; $M_Y/qS\ \ell_{ref}$
C_y	CY	side force coefficient; F_Y/qS
		Stability Axis System
C_L	CL	lift force coefficient; F_L/qS
C_D	CD	drag force coefficient; F_D/qS
C_{D_b}	CDB	base drag coefficient
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_n	CLN	yawing moment coefficient; $M_{Z,s}/qS\ b_{ref}$
C_ℓ	CSL	rolling moment coefficient; $M_{X,s}/qS\ b_{ref}$
L/D	L/D	lift-to-drag ratio; C_L/C_D
L/D_f	L/DF	lift to forebody drag ratio; C_L/C_{D_f}

NOMENCLATURE (Continued)

Surface Definitions

SYMBOL	SADSAC SYMBOL	DEFINITION
i_t	HORIZT	horizontal tail incidence; positive when trailing edge down; degrees
δ		symmetrical surface deflection angle; degrees; positive deflections are:
	AILRON	aileron - total aileron deflection; (left aileron - right aileron)/2
	CANARD	canard - trailing edge down
	ELEVON	elevon - trailing edge down
	ELEVTR	elevator - trailing edge down
	FLAP	flap - trailing edge down
	RUDDER	rudder - trailing edge to the left
	SPOILR	spoiler - trailing edge down
	TAB	tab - trailing edge down with respect to control surface
δ		antisymmetrical surface deflection angle, degrees; positive trailing edge down:
	AIL-L	left aileron - trailing edge down
	AIL-R	right aileron - trailing edge down
	ELVN-L	left elevon - trailing edge down
	ELVN-R	right elevon - trailing edge down
	SPLR-L	left spoiler - trailing edge down
	SPLR-R	right spoiler - trailing edge down

SURFACE SUBSCRIPTS	DEFINITION
a	aileron
b	base
c	canard
e	elevator or elevon
f	flap
r	rudder or ruddervator
s	spoiler
t	tail

NASA-MSFC-MAF

CONFIGURATIONS INVESTIGATED

The booster model was composed of the following components

B_{20} - body (see Figure 8)

W_{14} - wing (see Figure 9)

$C4_B$ - canard (see Figure 10)

V_8 - vertical stabilizer (see Figure 11)

and was tested alone in the complete configuration as well as in a buildup mode. The orbiter model consisted of

B_5 - body (see Figure 12)

W_{17} - wing (see Figure 13)

V_{17} - vertical stabilizer (see Figure 14)

and was tested in a buildup mode on the complete booster and along with a booster buildup mode. It was also tested as a complete model at various mounting positions on the booster. The Dataset Collation Sheets give a complete summary of the configurations investigated. There were five orbiter mounting positions tested. For the piggy-back mode, where the orbiter was mounted on top of the booster, the baseline position had the orbiter nose ahead of the booster (position 1) as shown in Figures 1 and 6. There were two alternate positions tested in the piggyback mode and had the orbiter nose aligned with the booster nose (position 2, Figure 2 and 6) and the orbiter nose aft of the booster nose (position 3, Figure 3 and 6). Two belly-to-belly mounting positions were tested where the orbiter was slung under the booster in a belly-to-belly mode. The baseline position had the

orbiter nose forward of the booster nose (position 4, Figures 4 and 6) and the alternate position had the orbiter nose well aft of the booster nose base to base (position 5, Figure 5 and 6).

Pertinent dimensional information on each of the model components tested is listed in the Model Component Description Sheets which follow the Dataset Collation Sheets.

TEST FACILITY DESCRIPTION

The Marshall Space Flight Center 14" x 14" Trisonic Wind Tunnel is an intermittent blowdown tunnel which operates by high pressure air flowing from storage to either vacuum or atmospheric conditions. A Mach number range from .2 to 5.85 is covered by utilizing two interchangeable test sections. The transonic section permits testing at Mach 0.20 through 2.50, and the supersonic section permits testing at Mach 2.74 through 5.85. Mach numbers between .2 and .9 are obtained by using a controllable diffuser. The range from .95 to 1.3 is achieved through the use of plenum suction and perforated walls. Mach numbers of 1.44, 1.93 and 2.50 are produced by interchangeable sets of fixed contour nozzle blocks. Above Mach 2.50 a set of fixed contour nozzle blocks are tilted and translated automatically to produce any desired Mach number in .25 increments.

Air is supplied to a 6000 cubic foot storage tank at approximately $-40^{\circ}F$ dew point and 500 psi. The compressor is a three-stage reciprocating unit driven by a 1500 hp motor.

The tunnel flow is established and controlled with a servo actuated gate valve. The controlled air flows through the valve diffuser into the stilling chamber and heat exchanger where the air temperature can be controlled from ambient to approximately $180^{\circ}F$. The air then passes through the test section which contains the nozzle blocks and test region.

Downstream of the test section is a hydraulically controlled pitch sector that provides a total angle of attack range of 20° ($\pm 10^{\circ}$). Sting offsets are available for obtaining various maximum angles of attack up to 25°.

DATA REDUCTION

The six aerodynamic forces and moments measured by the strain gauge balance were reduced to coefficient form in the body axis system utilizing the following reference dimensions:

S_{REF} = booster wing planform area = 15.656 in^2

ℓ_{REF} = $\bar{c}$ = booster wing mean aerodynamic chord = 3.095 inches

b_{REF} = booster wing span = 6.099 inches

Moments are referenced, in all cases, about the booster nose which is booster fuselage station 0, water line 0, butt line 0.

For the launch configuration and booster alone tests, static pressures were measured at two locations on the booster base as shown in Figure 15. These pressures were utilized to correct the measured axial force coefficient to one which assumed free-stream static pressure at the base. The calculation of this base axial force correction was:

$$C_{A_b} = -\left[(p_{b_1} - p_\infty)A_{b_1} + (p_{b_2} - p_\infty)A_{b_2}\right]/q_\infty S_{REF}$$

where $A_{b_1} = 0.418$ in^2

$A_{b_2} = 0.634$ in^2

A further correction was made to the axial force for the pressure acting in

the balance cavity area. This force coefficient correction was determined by

$$C_{A_c} = -(p_c - p_\infty)A_c/q_\infty S_{REF}$$

where $A_c = 0.785 \text{ in}^2$

Therefore the final corrected axial force coefficient was:

$$C_{A_F} = C_A - (C_{A_b} + C_{A_c})$$

SADSAC calculation routines were utilized to obtain stability axis data; to determine the center of pressure location as a percent of body length (XCP/L); to calculate cross-derivative data (C_{Y_β}, $C_{N_{\delta_e}}$, $C_{Y_{\delta_a}}$ etc.); and to determine incremental coefficients due to component addition or control surface deflection.

TABLE I

TEST CONDITIONS

TEST TWT-490

MACH NUMBER	REYNOLDS NUMBER per unit length	DYNAMIC PRESSURE (pounds/sq. inch)	STAGNATION TEMPERATURE (degrees Fahrenheit)
0.6	6.5×10^6	5.58	97
0.9	6.9×10^6	7.96	95
1.0	6.7×10^6	8.33	98
1.1	6.7×10^6	8.73	96
1.2	6.6×10^6	8.98	97
1.46	6.6×10^6	9.56	99
1.96	8.9×10^6	12.80	96
2.99	4.4×10^6	4.95	98
4.96	6.1×10^6	3.40	99

BALANCE UTILIZED: TWT Model 200 Moment Balance

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	175 lbs		0.3%
SF	150 lbs		0.3%
AF	100 lbs		0.3%
PM	185 in. lbs		0.3%
YM	160 in. lbs		0.3%
RM	50 in. lbs		0.3%

COMMENTS:

No satisfactory method is known for determining the absolute accuracy of the final data coefficients.

TEST TWT-490 DATA SET COLLATION SHEET

Force- Booster, 0.0035-Scale, Stability and Control

☐ PRETEST

☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	CONTROL DEFLECTION SE				NO. of RUNS	MACH NUMBERS 0.6	0.9	1.0	1.1	1.2	1.46	1.96	2.99	4.96			
R32 01A	B20	A	0					5	158/0	159/0		160/0		213/0	208/1					
02A	B20C4B	↓	↓					5	140/0	141/0		142/0		212/0	206/0					
03A	B20C4BW14			0				7	110/0	111/0	903/0	112/0	904/0	220/0	164/0					
04A	B20W14			↓				5	115/0	114/0		113/0		218/0	165/0					
05A	B20C4BW14V8			↓				9	001/0	002/1	003/0	004/1	005/0	221/0	162/0	268/0	267/0			
06A	↓	↓	↓	+10L -10R				7	010/0	009/0	008/0	007/0	006/0	222/0	163/0					
05B	↓	B	↓	0				5					298/1	278/0	297/0	276/0	275/0			
58A	B20	A	6	↓				5	334/0	333/1		332/0		285/0	290/0					
07A	B20C4BW14V8	↓	↓	0				9	324/0	330/0	329/0	328/0	327/0	279/0	296/0	274/0	273/0			
05C	↓	0	C	↓				9	083/0	084/0	085/0	086/0	087/0	223/0	161/0	266/0	265/0			
57B	↓	B	0	10				1									277/0			

1 7 13 19 25 31 37 43 49 55 61 67 75 76

CLM ICN ICY ICBL ICYN ICAF ICAB ICPB1 ICPC ICL 1 0

COEFFICIENTS: IDPVAR(1) IDPVAR(2) NDV

α or β SCHEDULES

αA = -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10

αB = 6, 8, 10, 12, 14, 16, 18, 20, 22, 24

βC = -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10

TEST TWT-490 DATA SET COLLATION SHEET

Force - Booster + Orbiter, 0.0035-Scale, Launch Stability and Control

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	CONTROL DEFLECTION δE	δC	δe_O	δr_O	NO. of RUNS	ORB. ATT. POS	ORB. ATT. i	MACH 0.6	0.9	1.0	1.1	1.2	1.46	1.96	2.99	4.96
R32 08A	B20+B5	A	0					5	1	0	157/0	156/0		155/0		214/0	201/0		
09A	B20W14+B5	↓	↓	0				5	↓	↓	134/0	135/0		136/0		219/0	200/0		
10A	B20W14+B5W17			↓		0		5			121/0	120/0		119/0		217/0	199/0		
11A	B20C4BW14+B5W17			↓	0	↓		5			122/0	123/0		124/0		231/0	197/0		
12A	B20C4B+B5				↓			5			139/0	138/0		137/0		210/0	205/0		
13A	B20+B5W17					0		5			152/0	153/0		154/0		215/0	202/0		
14A	B20+B5W17V17					↓	0	5			151/0	150/0		149/0		216/0	203/0		
15A	B20C4B+B5W17V17				0	↓	↓	5			146/0	147/0		148/0		209/0	204/0		
16A	B20C4BW14V8+B5V17		↓	0	↓		↓	5			127/0	126/0		125/0		232/0	198/0		
17A	B20+B5		6					5			340/0	339/0		338/0		287/0	288/0		
18A	B20C4BW14V8+B5W17		↓	0	0	0		5			323/0	322/0		321/0		284/0	291/0		
19A	B20C4BW14+B5W17V17			↓	↓		0	5			318/0	319/0		320/0		283/0	292/0		
20A	B20+B5W17V17							5			335/0	336/0		337/0		286/0	289/0		
21A	B20C4BW14V8+B5W17V17		↓	0	0			9			317/0	316/0	315/0	314/0	313/0	281/0	294/0	272/0	271/0
22A	↓		0	↓				9			025/0	026/0	027/0	028/0	029/0	235/0	177/0	264/0	259/0
23A			↓	-20				5			024/0	023/0		022/0		236/0	178/0		
24A				-10				5			019/0	020/0		021/0		237/0	179/0		
25A				10				5			018/0	017/0		016/0		238/0	180/0		
26A				+10L -10R		↓		8			011/0	012/0	013/0	014/0	015/0	239/0		262/0	261/0
↓ 27A	↓	↓	↓	0	↓	10	↓	5	↓	↓	032/0	31/0		030/0		240/0	182/0		

1	7	13	19	25	31	37	43	49	55	61	67	75	76
CLM	ICN	ICY	KBL	ICYN	CAF	KAB	KPB1	KPC	CL				10

IDPVAR(1) | IDPVAR(2) | NDV

COEFFICIENTS: α A = -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10

α or β SCHEDULES

POS 1 : P/B - BASE
2 : P/B - N/N
3 : P/B - AFT
POS 4 : B/B-BASE
5 : B/B-AFT

16

TEST TWT-940 DATA SET COLLATION SHEET

Force - Booster + Orbiter, 0.0035-Scale, Launch Stability and Control

☐ PRETEST

☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	CONTROL DEFLECTION δE	δC	δE_O	δR_O	NO. of RUNS	OR B. ATT. POS	OR B. ATT. i	MACH NUMBERS 0.6	0.9	1.0	1.1	1.2	1.46	1.96	2.99	4.96	
R32 28A	B20C4BW14V8+BSW17V17	A	O	O	O	-10	O	5	1	O	033/2	034/0		035/0		241/0	183/0			
29A		↓	↓	↓	↓	OFF	↓	5	↓	↓	038/0	037/0		036/0		242/0	184/0			
22B		B	↓	↓	↓	O	↓	1	↓	↓	299/0									
23B		↓	↓	-20	↓	↓	↓	1	↓	↓	300/0									
24B		↓	↓	-10	↓	↓	↓	1	↓	↓	301/0									
25B		↓	↓	10	↓	↓	↓	1	↓	↓	302/0									
26B		↓	↓	+10L -10R	↓	↓	↓	1	↓	↓	303/0									
30B		↓	↓	O	-15	↓	↓	1	↓	↓	304/0									
31B		↓	↓	↓	-30	↓	↓	1	↓	↓	305/0									
22C		O	C	↓	O	↓	↓	9	↓	↓	046/0	045/0	044/0	043/0	042/0	243/0	186/0	264/0	263/0	
32C		-6	↓	↓	↓	↓	↓	9	↓	↓	308/0	309/0	310/0	311/0	312/0	282/0	293/0	270/0	269/0	
33C		O	↓	+10L -10R	↓	↓	↓	5	↓	↓	047/0	048/0		049/0		246/0	187/0			
34C		↓	↓	O	↓	↓	-10	5	↓	↓	052/0	051/0		050/0		245/0	188/0			
35C		↓	↓	↓	↓	↓	OFF	5	↓	↓	039/0	040/0		041/0		244/0	185/0			
36A		A	O	↓	↓	↓	O	5	↓	2	053/0	054/0		055/0		247/0	176/0			
37A		↓	↓	↓	↓	↓	↓	5	↓	4	058/0	057/0		056/0		248/0	175/0			
38A		↓	↓	↓	↓	↓	↓	5	2	O	059/0	060/0		061/0		249/1	191/0			
38C		O	C	↓	↓	↓	↓	5	↓	↓	070/0	069/0		068/0		252/0	192/0			
39A		A	O	↓	↓	↓	↓	5	↓	2	064/0	063/0		062/0		250/0	190/0			
40A		↓	↓	↓	↓	↓	↓	5	↓	4	065/0	066/0		067/0		251/0	189/0			

1 7 13 19 25 31 37 43 49 55 61 67 75 76

CLM	KN	KY	ICBL	KYN	KAF	KAB	KPB1	ICPC	KL										10
																		IDPVAR(1)	IDPVAR(2)	NDV

COEFFICIENTS:

α or β SCHEDULES

αA = -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10

αB = 6, 8, 10, 12, 14, 16, 18, 20, 22, 24

βC = -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10

POS 1: P/B-BASE POS 4: B/B-BASE

2: P/B-N/N 5: B/B-AFT

3: P/B-AFT

TEST TWT-490 DATA SET COLLATION SHEET

Force-Booster + Orbiter, 0.0035-Scale, Launch Stability and Control

☐ PRETEST
☒ POSTTEST

DATA SET IDENTIFIER	CONFIGURATION	SCHD. α	SCHD. β	CONTROL DEFLECTION δE	δC	δE₀	δR₀	NO. of RUNS	ORB. ATT. POS	ORB. ATT. ℓ	MACH 0.6	0.9	1.0	1.1	1.2	1.46	1.96	2.99	4.96	
R32 41A	B20C4BW14V8+B5W17V17	A	0	0	0	0	0	5	3	0	076/0	075/0		074/0		254/0	194/0			
42C	↓	0	C	↓	↓	↓	↓	5	↓	↓	071/0	072/0		073/0		253/0	193/0			
43A		A	0					5		2	077/0	078/1		079/0		255/0	195/0			
44A	↓	↓	↓		↓	↓	↓	5	↓	4	082/0	081/0		080/0		256/0	196/0			
45A	B20W14+B5							5	4	0	133/0	132/0		131/0		229/0	161/0			
46A	B20W14+B5W17					0		5			116/0	117/0		118/0		230/0	166/0			
47A	B20C4BW14+B5				0			5			128/0	129/0		130/0		228/0	168/0			
48A	B20C4BW14+B5W17V17			↓	↓	0	0	5			109/0	108/0		107/0		227/0	169/0			
49A	B20C4B+B5							5			145/0	144/0		143/0		211/0	207/0			
50A	B20C4BW14V8+B5W17V17			0		0	0	9			097/0	096/0	095/0	094/0	093/0	225/0	170/0	258/0	257/0	
51A	↓	↓		10				5			098/0	099/0		100/0		226/0	171/0			
51B		B		↓				1			307/0									
50B		↓	↓	0				1			306/0									
50C		0	C	↓				7		↓	088/0	089/0	090/0	091/0	092/0	224/0	172/0			
52A		A	0	↓				5		2	103/0	102/0		101/0		233/0	174/0			
53A		↓	↓	10				2	↓	↓		902/0		901/0						
54A			↓	0				5	5	0	104/0	105/0		106/0		234/0	173/0			
55A			6	↓				5	↓	↓	331/0	325/0		326/0		280/0	295/0			
56A	↓	↓	0	-10L +10R	↓	↓	↓	1	1	↓							181/0			

1 7 13 19 25 31 37 43 49 55 61 67 75 76

CLM CN CY CBL CYN CAF CAB CPB1 CPC CL 1 0

COEFFICIENTS: → IDPVAR(1) | IDPVAR(2) | NDV

α or β SCHEDULES

αA = -6, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10

αB = 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26

βC = -10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10

POS 1: P/B - BASE
2: P/B - N/N
3: P/B - AFT
4: B/B - BASE
5: B/B - AFT

TABLE III

MODEL COMPONENT: BODY - B_{20}

GENERAL DESCRIPTION: Body for B-15B Delta Wing Configuration, extended 10% over basic (B_{19}) body

DRAWING NUMBER: WT-70-105222

DIMENSIONS:	FULL-SCALE	MODEL SCALE AS BUILT
Length (nose to wing T. E.)		10.689
Max. Width		1.356
Max. Depth		1.587
Fineness Ratio		6.73
Area		
Max. Cross-Sectional		2.252
Planform		13.809
Wetted		
Base		1.840

TABLE III (CONCLUDED)

MODEL COMPONENT: Wing W_{14}

GENERAL DESCRIPTION: W_{10} modified to unswept trailing edge and with twist outboard of B. L. 340 linearly increasing to -4 degrees at tip and with leading edge faired into fuselage (W_{10} is the basic B-15B wing)

DRAWING NUMBER: WT-7-105222

DIMENSIONS:	FULL-SCALE	MODEL SCALE AS BUILT
TOTAL DATA		
Area		
Planform		15.656
Wetted		
Span (equivalent)		6.099
Aspect Ratio		2.38
Rate of Taper		
Taper Ratio		0.1192
Diehedral Angle, degrees		3 at T.E.
Incidence Angle, degrees		2
Aerodynamic Twist, degrees		-4
Toe-In Angle		
Cant Angle		
Sweep Back Angles, degrees		
Leading Edge		53
Trailing Edge		0
0.25 Element Line		44.85
Chords:		
Root (Wing Sta. 0.0)		4.587
Tip, (equivalent)		0.547
MAC		3.095
Fus. Sta. of .25 MAC		10.193*
W.P. of .25 MAC		0.766
B.L. of .25 MAC		1.126
Airfoil Section		
Root	NACA-0010-64 (mod)	
Tip	NACA-0010-64 (mod)	
EXPOSED DATA		
Area		10.03
Span, (equivalent)		4.743
Aspect Ratio		2.24
Taper Ratio		0.1485
Chords		
Root		3.684
Tip		0.547
MAC		2.504
Fus. Sta. of .25 MAC		11.356
W.P. of .25 MAC		0.776
B.L. of .25 MAC		1.572

*Fuselage stations are relative to an origin 3.500 inches ahead of the nose of B_{19}

TABLE III (CONTINUED)

MODEL COMPONENT: Canard C_{l_t}

GENERAL DESCRIPTION: Basic canard for B-15B Delta Wing Configuration

DRAWING NUMBER: WT-70-105224

DIMENSIONS:	FULL-SCALE	MODEL SCALE AS BUILT
Area (exposed)		0.706
Span (equivalent)		2.576
Inb'd equivalent chord		1.061
Outb'd equivalent chord		0.099
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge		57.68
Tailing Edge		0
Hingeline		
Area Moment (Normal to hinge line)		

Hinge line located at 25% of M.A.C.of exposed area

MODEL COMPONENT: Vertical Tail V_8

GENERAL DESCRIPTION: Alternate vertical tail with NACA 0012-64 (MOD) airfoil section.

DRAWING NUMBER: WT-71-105803 Sheet 1, Chg. Ltr. C

DIMENSIONS:	FULL-SCALE	MODEL SCALE (with cut-out
Area		as built 2.326 in^2
Span (equivalent)		2.007 in
Inb'd equivalent chord		1.723 in
Outb'd equivalent chord		0.656 in
Ratio Elevator chord/horizontal tail chord		
At Inb'd equiv. chord		.35
At Outb'd equiv. chord		.35
Sweep Back Angles, degrees		
Leading Edge		35.0 Deg
Tailing Edge		10.0 Deg
Hingeline		20.0 Deg
Area Moment (Normal to hinge line)		

TABLE III (CONTINUED)

MODEL COMPONENT: BODY - B5

GENERAL DESCRIPTION: 9992-134B body. Delta wing orbiter body including a canopy on the upper surface aft of the nose. The model scale factor is 0.0035

DRAWING NUMBER: Lines Dwg. 9992-134B

DIMENSIONS:	FULL-SCALE	MODEL SCALE
Length , in.	2120.00	7.420
Max. Width , in.	462.86	1.620
Max. Depth , in.	274.29	0.960
Fineness Ratio	5.906	5.906
Area		
Max. Cross-Sectional, ft^2 (Fus. Sta. 1215.0 to 1809.0 in.)	702.75	0.00860
Planform	-	-
Wetted	-	-
Base		

TABLE III (CONTINUED)

MODEL COMPONENT: Wing-W17

GENERAL DESCRIPTION: Delta wing with -5° twist and rounded wing tips. Wing blends into body. Follows NR lines drawing 9992-134D.

Model Scale = 0.0035

DRAWING NUMBER: S-865-13, - 14, - 55 thru - 60

DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA		
Area, ft^2		
Planform	6026.60	0.07383
Wetted		
Span (equivalent), in.	1286.28	4.502
Aspect Ratio	1.892	1.892
Rate of Taper	1.723	1.723
Taper Ratio	0.094	0.094
Dihedral Angle, degrees	7.0	7.0
Incidence Angle, degrees	0.0	0.0
Aerodynamic Twist, degrees(about T.E)	-5.0	-5.0
Toe-In Angle	-	-
Cant Angle	-	-
Sweep Back Angles, degrees		
Leading Edge	60.056	60.056
Trailing Edge	0.000	0.000
0.25 Element Line	52.473	52.473
Chords: in.		
Root (Wing Sta. 0.0)	1232.91	4.315
Tip, (equivalent) (W.S. 647.97)	116.45	0.408
MAC (W.S. 234.63)	828.64	2.900
Fus. Sta. of .25 MAC	1498.52	5.245
W.P. of .25 MAC	46.27	0.162
B.L. of .25 MAC	232.88	0.815
Airfoil Section		
Root (W.S. 241.80)	NACA 0009-64	
Tip (W.S. 546.07)	NACA 0012-64	
EXPOSED DATA		
Area, ft^2	2658.68	0.03257
Span, (equivalent) in.	814.61	2.851
Aspect Ratio	1.720	1.720
Taper Ratio	0.141	0.141
Chords: in.		
Root, (Equiv.) (W.S. 237.61)	823.51	2.882
Tip, (Equiv.) (W.S. 647.97)	116.45	0.408
MAC (W.S. 391.34)	558.63	1.955
Fus. Sta. of .25 MAC	1701.03	5.954
W.P. of .25 MAC	65.37	0.229
B.L. of .25 MAC	388.43	1.359
LEADING EDGE CUFF		
Planform area, ft^2	46.13	0.00057
Leading edge intersects Fus. M_L @ Sta., in.	1182.86	4.140
Leading edge intersects wing L.E. @ Sta., in.	1425.73	4.000

TABLE III (CONTINUED)

MODEL COMPONENT: Vertical Stabilizer - V_{17}

GENERAL DESCRIPTION: Centerline vertical stabilizer with the 5° (half angle) wedge trailing edge. Used with delta wing orbiter body B_5 (configuration 9992-1342).

The model scale factor is 0.0035.

DRAWING NUMBER: S-867-47, -50

DIMENSIONS:	FULL-SCALE	MODEL SCALE
TOTAL DATA		
Area		
Planform, ft^2	667.76	0.00818
Theoretical Span, in.	380.421	
Span (equivalent), in.	377.52	1.321
Aspect Ratio	1.482	1.482
Rate of Taper	0.718	0.718
Taper Ratio	0.305	0.305
Dihedral Angle, degrees	-	-
Incidence Angle, degrees	-	-
Aerodynamic Twist, degrees	-	-
Toe-In Angle, degrees	0.0	0.0
Cant Angle, degrees	0.0	0.0
Sweep Back Angles, degrees		
Leading Edge	45.0	45.0
Trailing Edge	15.734	15.734
0.25 Element Line	39.367	39.367
Chords: Theoretical Tip, in.	117.053	
Root W.P. 274.29, in.	390.29	1.366
Tip, (equivalent),(W.P. 646.90 in), in.	119.13	0.417
MAC (W.P. 428.19 in.), in.	278.76	0.976
Fus. Sta. of .25 MAC , in.	2034.10	7.119
W.P. of .25 MAC, in.	429.55	1.503
B.L. of .25 MAC, in.	0.0	0.0
Airfoil Section, Wedge shape with L.E.H. and flat T.E.		
L.E. Radius, in. (1.6% chord)	6.29	0.022
EXPOSED DATA		
Area		
Span, (equivalent)		
Aspect Ratio		
Taper Ratio		
Chords		
Root		
Tip		
MAC		
Fus. Sta. of .25 MAC		
W.P. of .25 MAC		
B.L. of .25 MAC		

TABLE VI. INDEX OF MODEL FIGURES

1.	Photograph of Launch Configuration; Orbiter in Position 1 (Baseline, Piggyback)	29
2.	Photograph of Launch Configuration; Orbiter in Position 2	30
3.	Photograph of Launch Configuration; Orbiter in Position 3	31
4.	Photograph of Launch Configuration; Orbiter in Position 4 (Baseline, Belly-to-Belly)	32
5.	Photograph of Launch Configuration; Orbiter in Position 5	33
6.	Booster-Orbiter Mounting Relationships	34
7.	Three-View Sketch of Booster, $B_{20}W_{14}C_{4B}V_8$	39
8.	Booster Body - B_{20}	40
9.	Booster Wing - W_{14}	41
10.	Booster Canard - C_{4B}	42
11.	Booster Tail - V_8	43
12.	Orbiter Body - B_5	44
13.	Orbiter Wing - W_{17}	45
14.	Orbiter Vertical Stabilizer - V_{17}	46
15.	Booster Base Pressure Orifice Locations	47
16.	Axis System	48

TABLE V INDEX OF DATA FIGURES

		PAGE
1.	Longitudinal Characteristics of Booster	1
2.	Longitudinal Characteristics of Booster Components B_{20}, V_8, W_{14} and C_{4B}	55
3.	Lateral Directional Characteristics	70
4.	Longitudinal Characteristics of Booster	79
5.	Longitudinal Characteristics of Booster - Alpha = 0 Degrees	99
6.	Longitudinal Characteristics of Booster	104
7.	Booster Characteristics at Zero and 6 Degrees Angle of Sideslip	144
8.	Body Characteristics at Zero and 6 Degrees Angle os Sideslip	243
9.	Booster Component Buildup	298

MODEL FIGURES

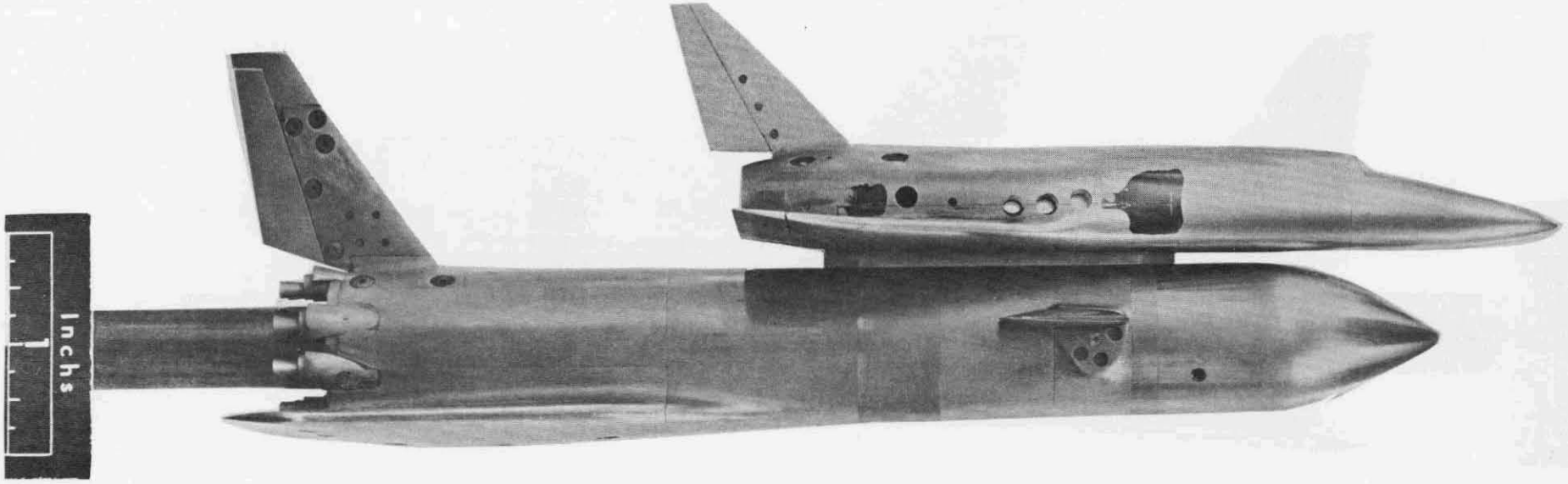


Figure 1. Photograph of Launch Configuration, Orbiter in Position 1 (Baseline - Piggyback)

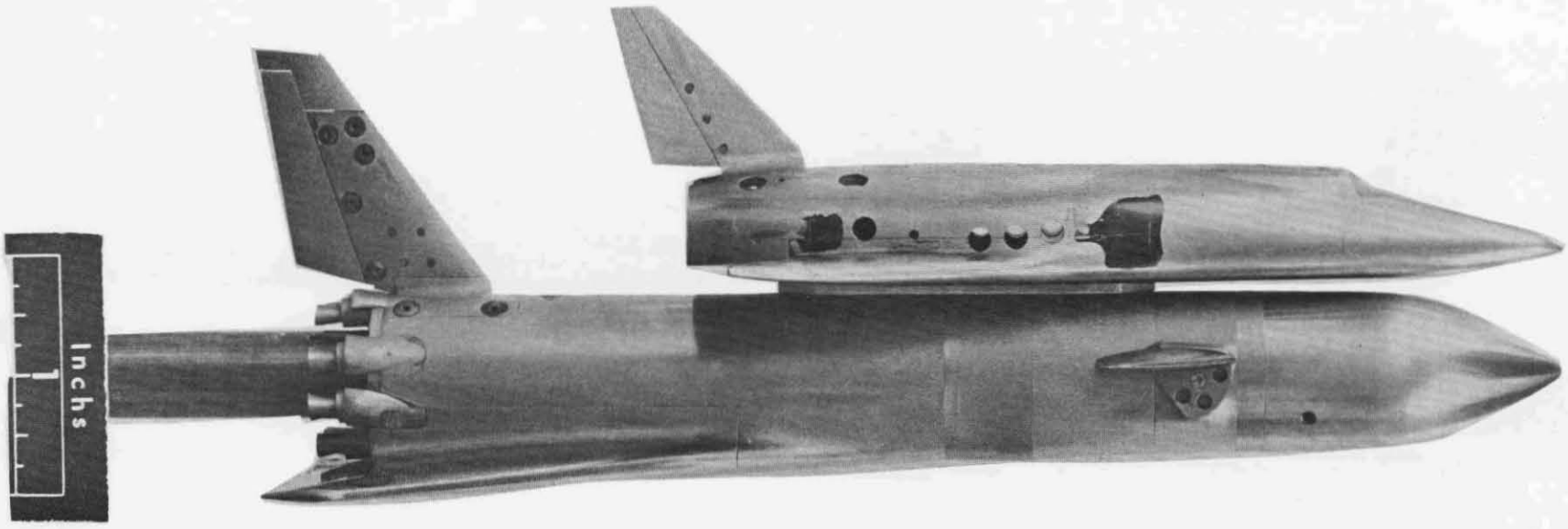


Figure 2. Photograph of Launch Configuration, Orbiter in Position 2

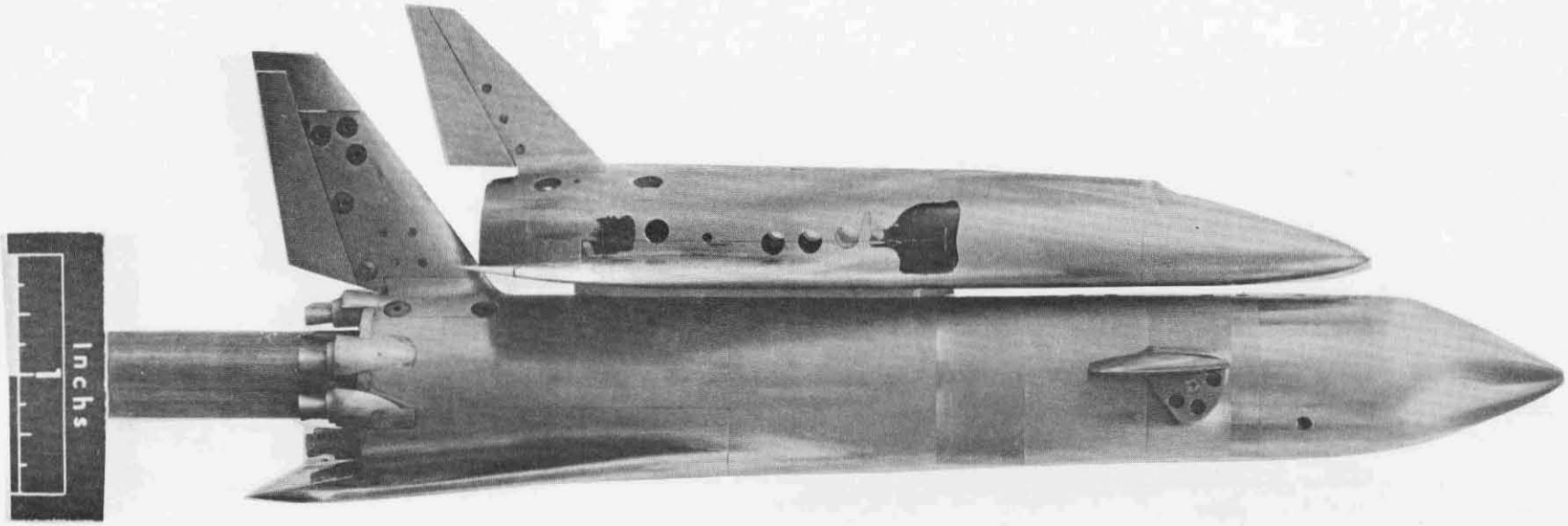


Figure 3. Photograph of Launch Configuration, Orbiter in Position 3

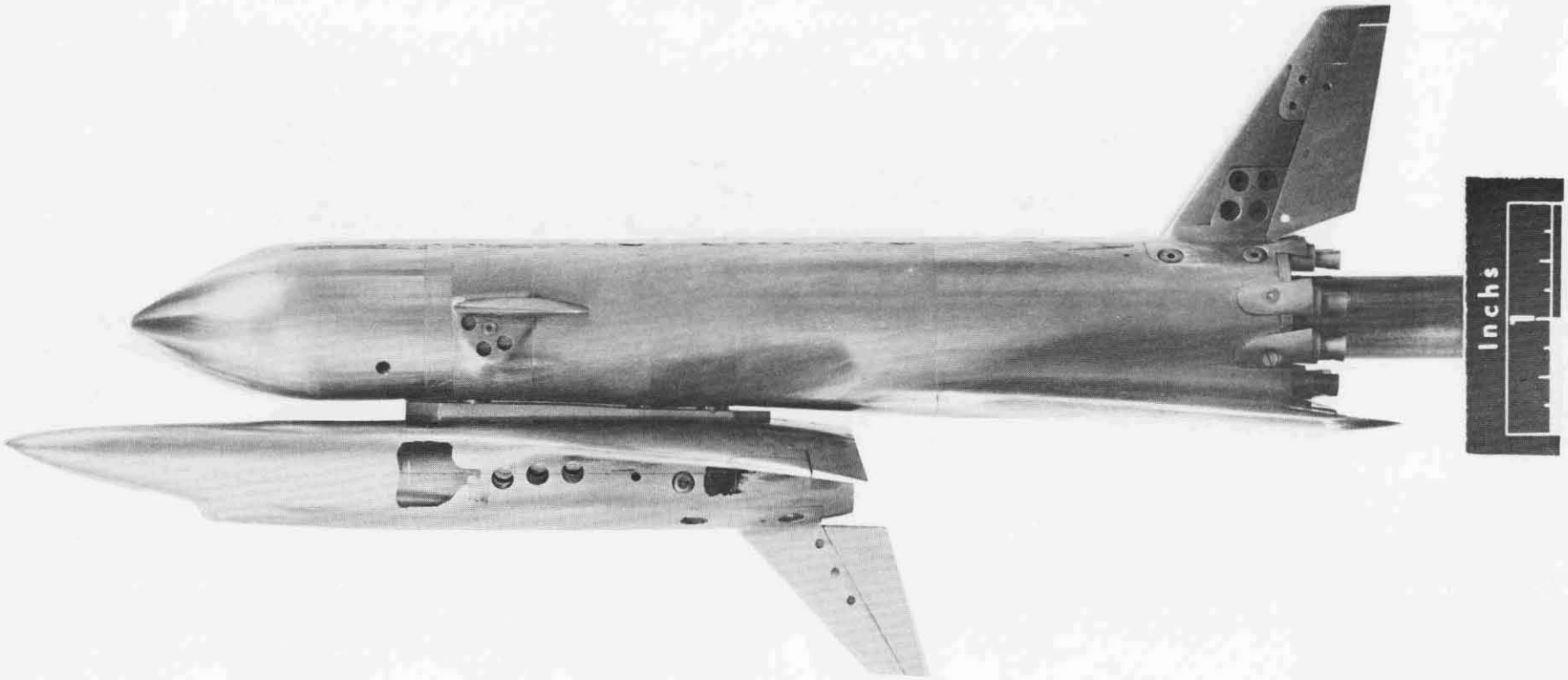


Figure 4. Photograph of Launch Configuration, Orbiter in Position 4 (Baseline - Belly-to-Belly)

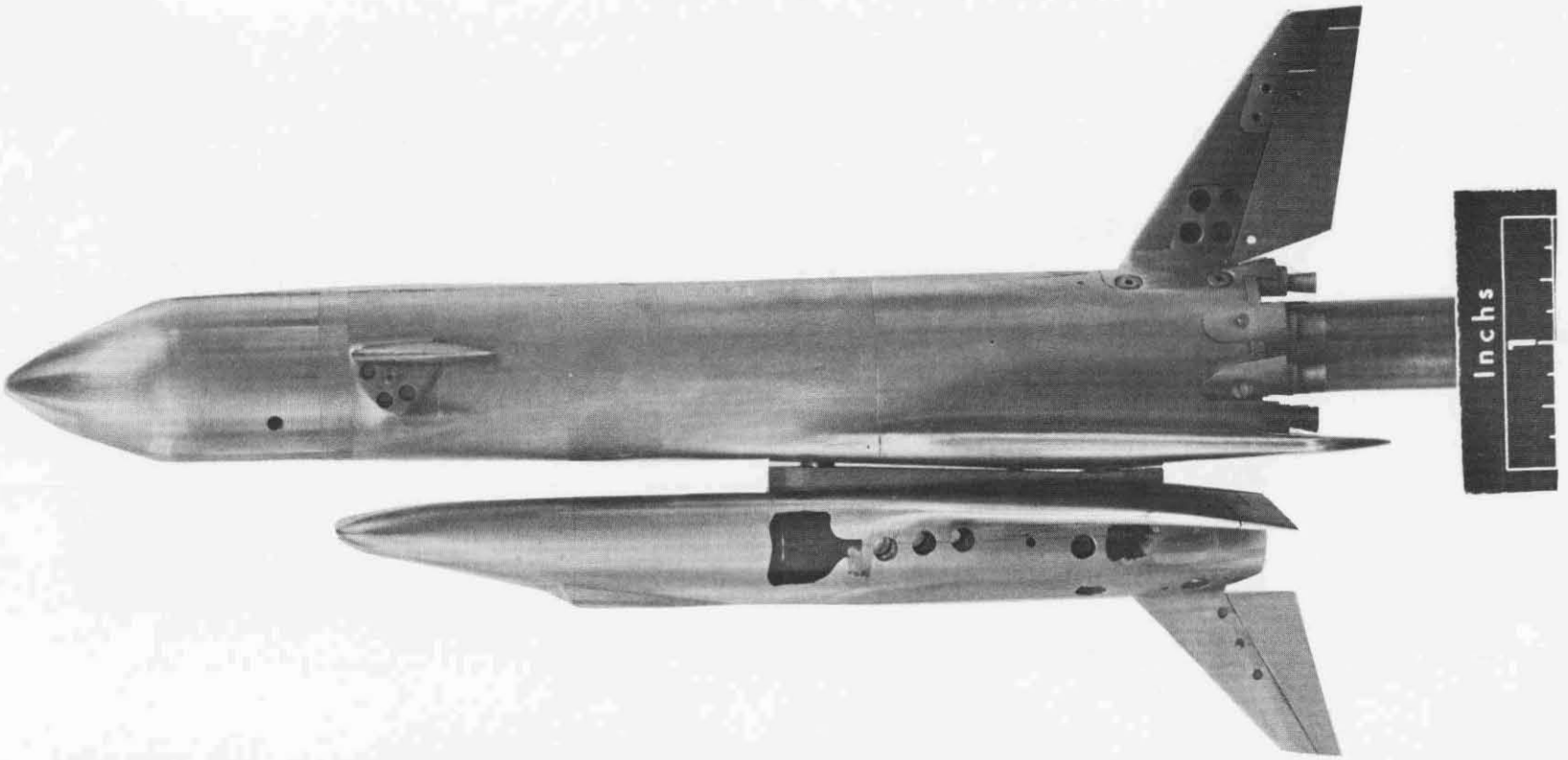


Figure 5. Photograph of Launch Configuration, Orbiter in Position 5

SSV LAUNCH CONFIGURATION

Piggy Back - Baseline
(Position 1)

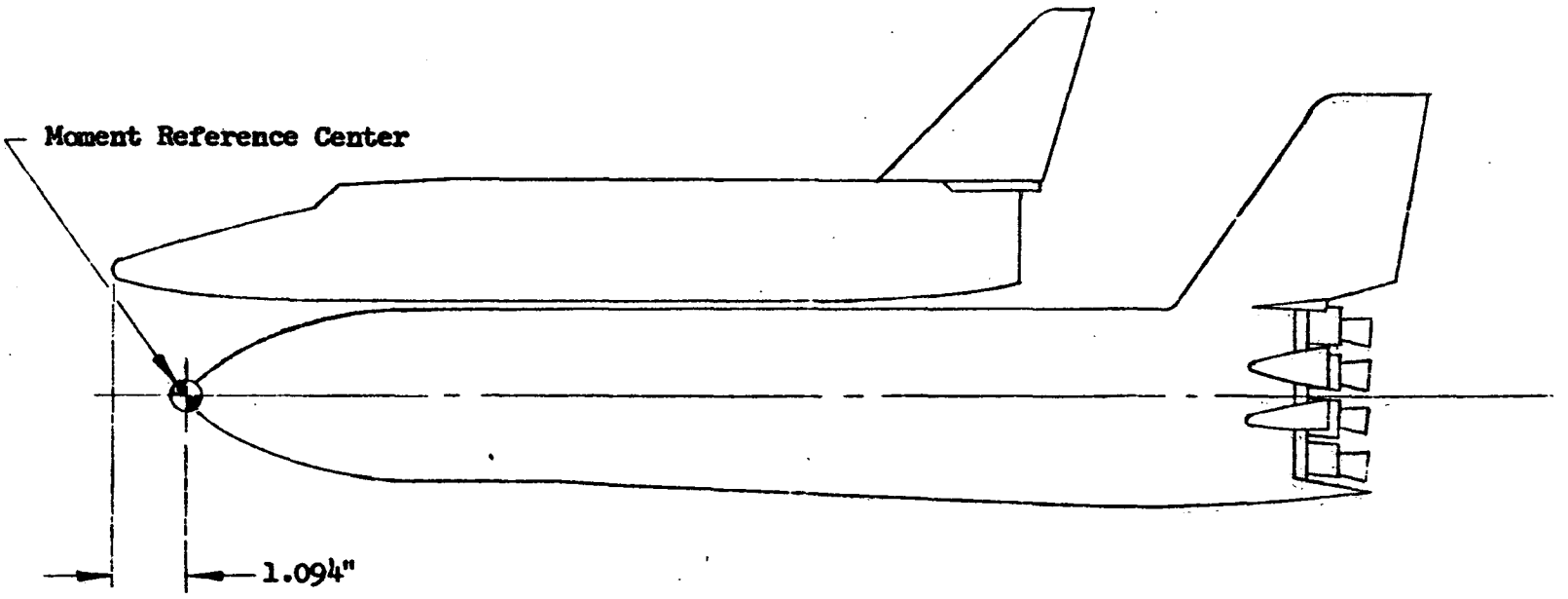


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS

SSV LAUNCH CONFIGURATION

Piggy Back - Nose To Nose
(Position 2)

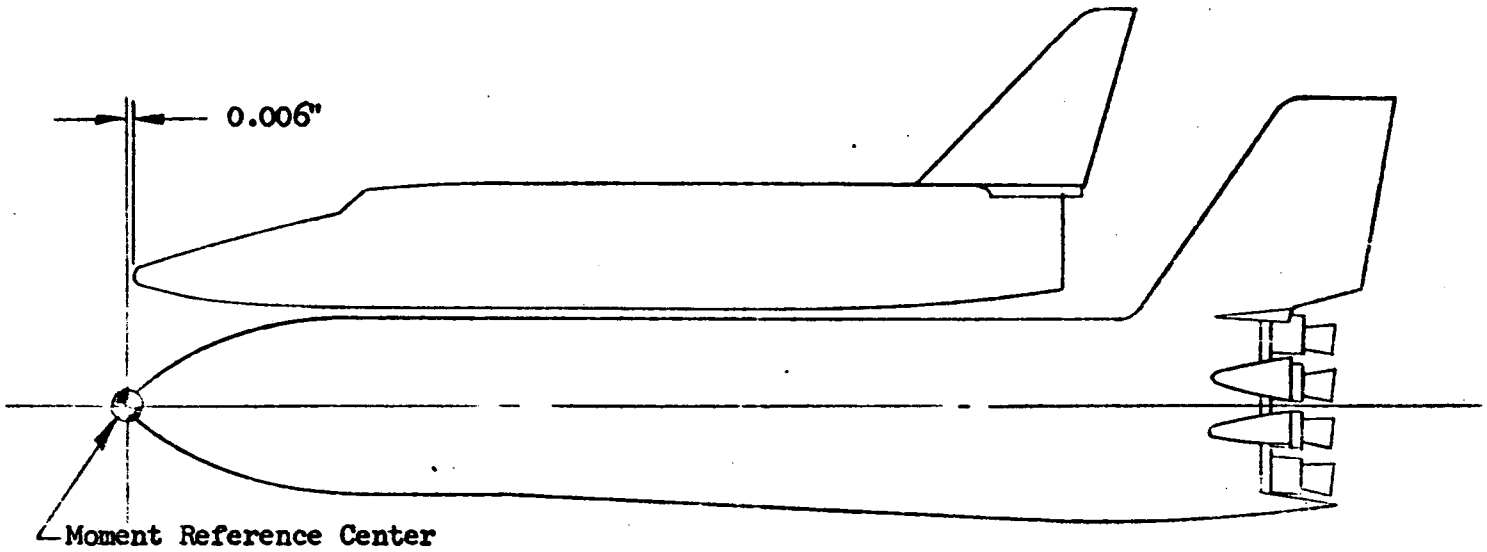


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

SSV LAUNCH CONFIGURATION

Piggy Back - Orbiter Aft
(Position 3)

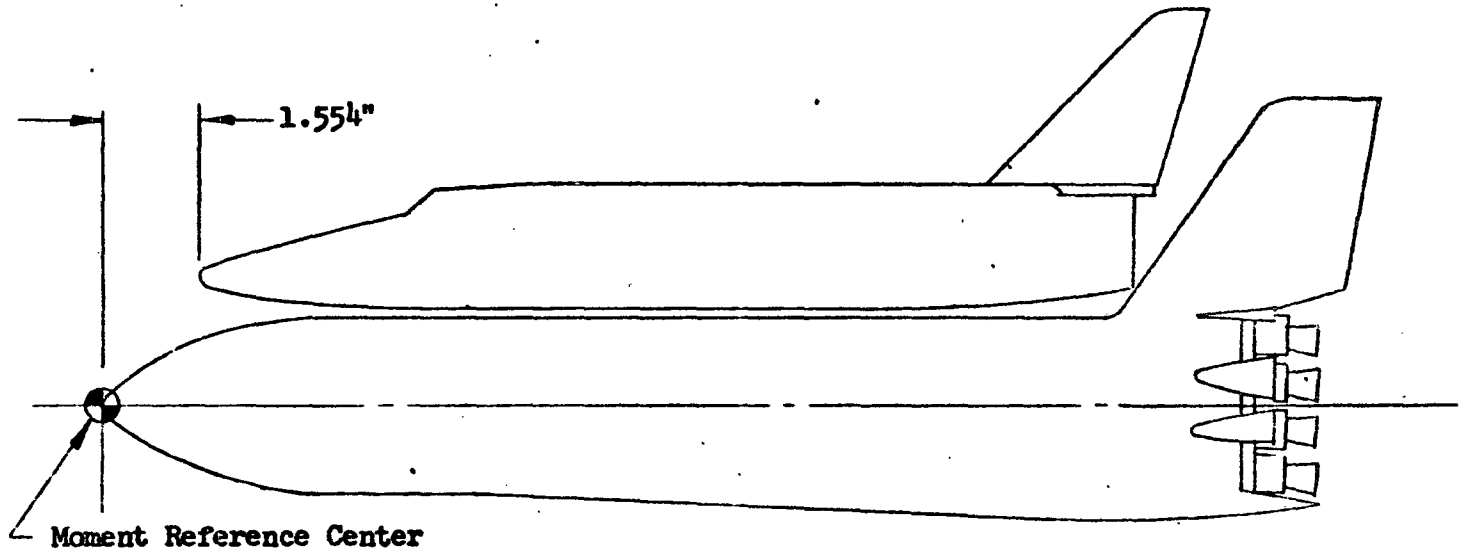


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

SSV LAUNCH CONFIGURATION

Belly To Belly - Baseline
(Position 4)

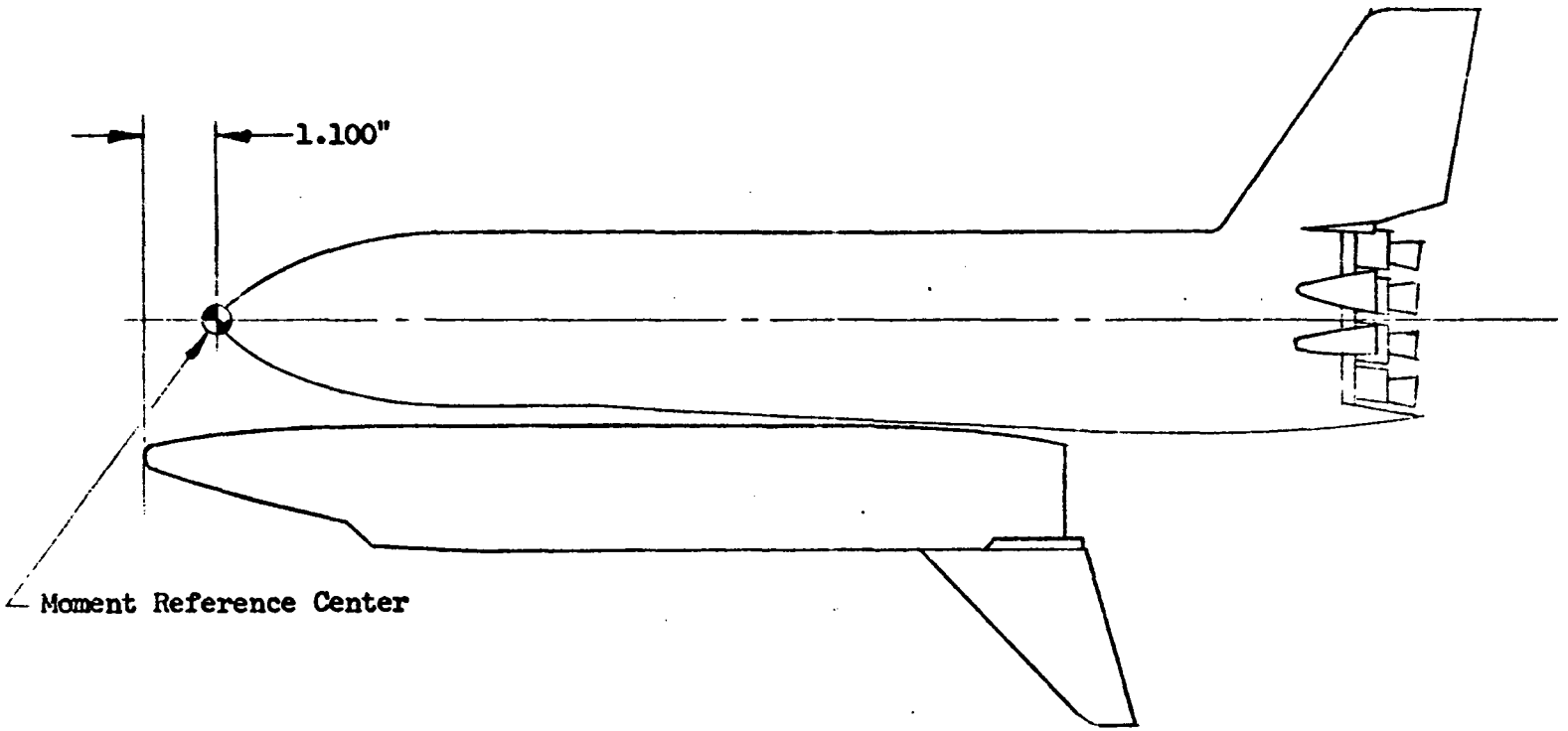


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

SSV LAUNCH CONFIGURATION

Belly To Belly - Aft
(Position 5)

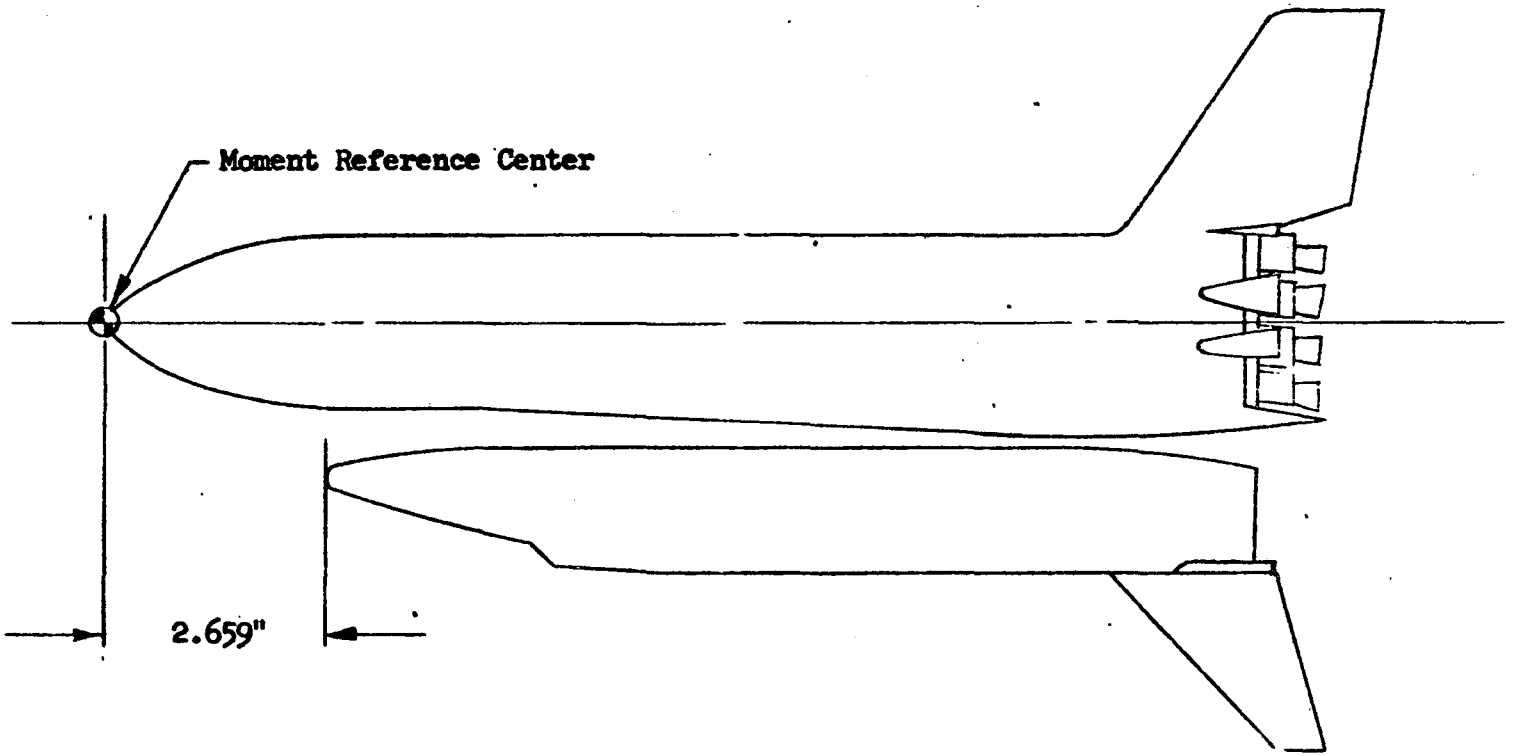


FIGURE 6. BOOSTER ORBITER MOUNTING RELATIONSHIPS (Continued)

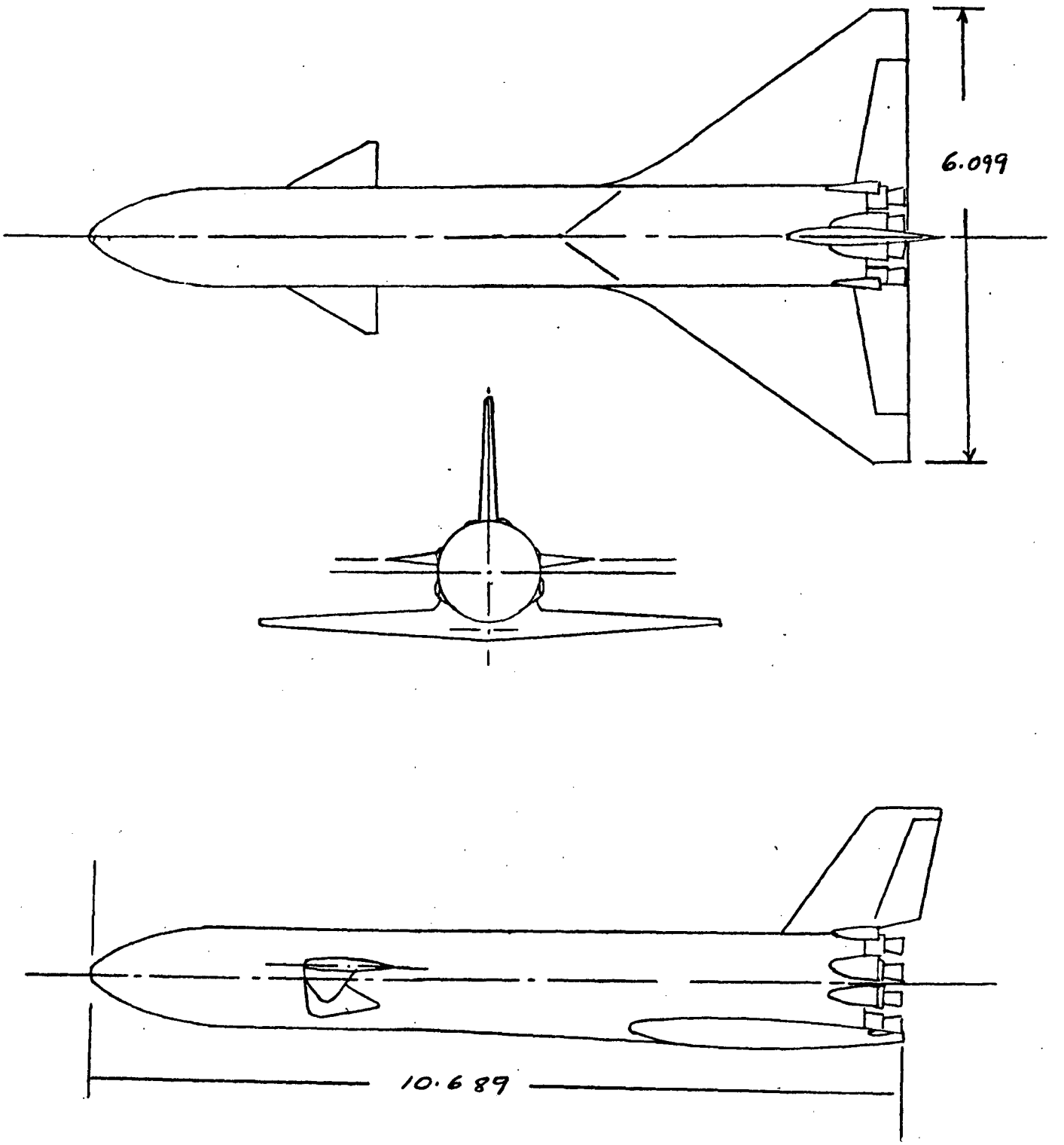


FIGURE 7. THREE-VIEW SKETCH OF BOOSTER $B_{20}W_{14}C_{48}V_8$

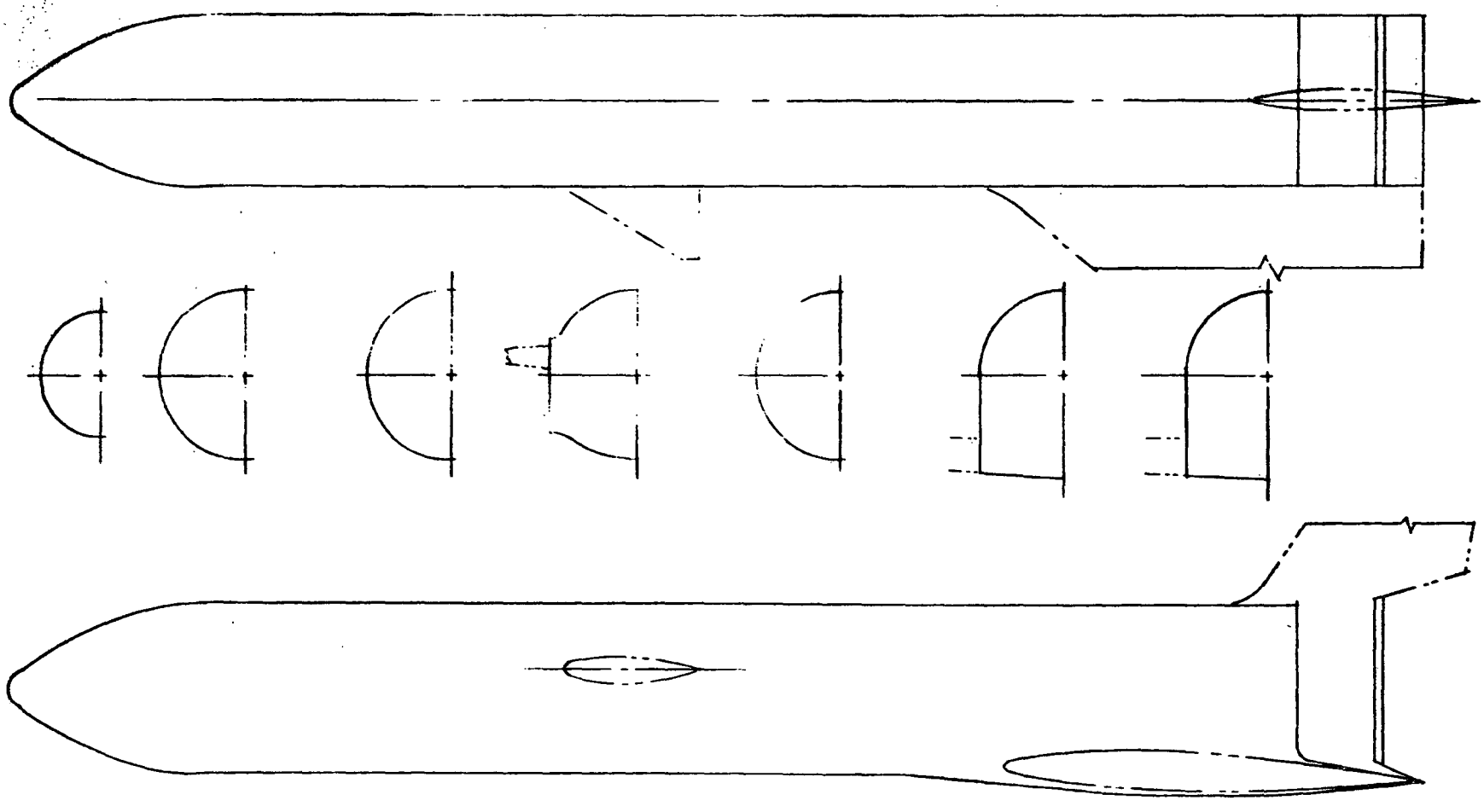


FIGURE 8.

BODY B_{20} - BOOSTER B-15 B-1 (LENGTHENED 10%) CONFIGURATION

MODEL DESCRIPTION

Delta Wing Booster - (Cont'd)

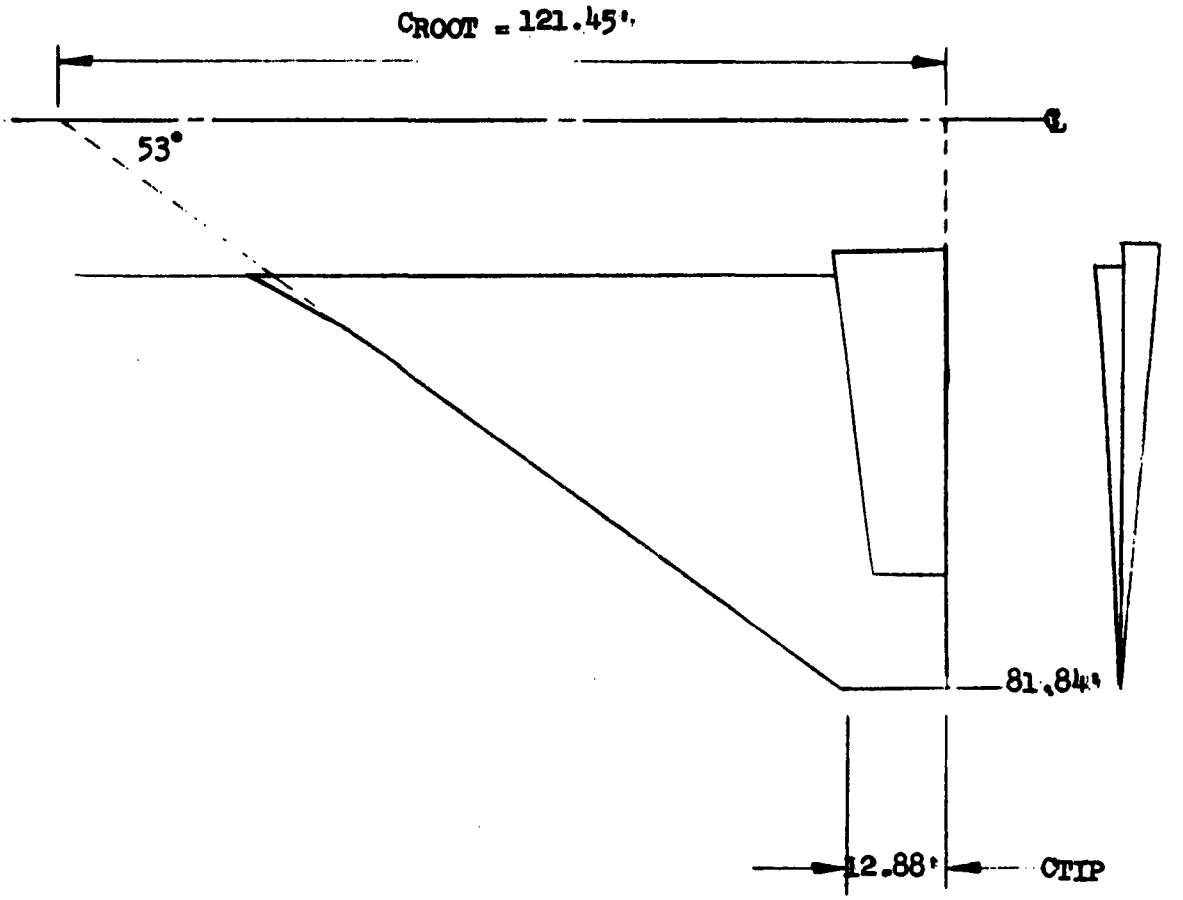


FIGURE 9. WING W14 - BOOSTER CONFIGURATION

MODEL DESCRIPTION

Delta Wing Booster - (Cont'd)

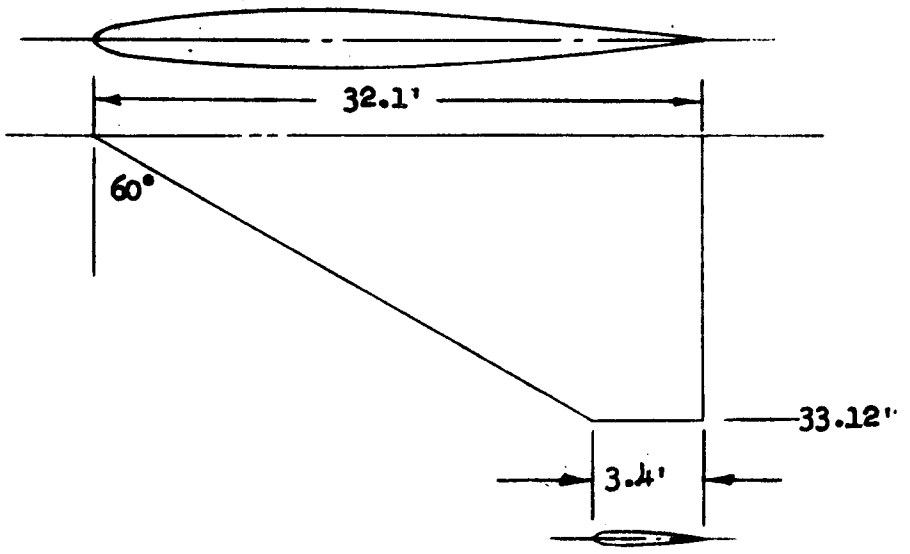


FIGURE 10. CANARD - C_4

MODEL DESCRIPTION

Delta Wing Booster - (Cont'd)

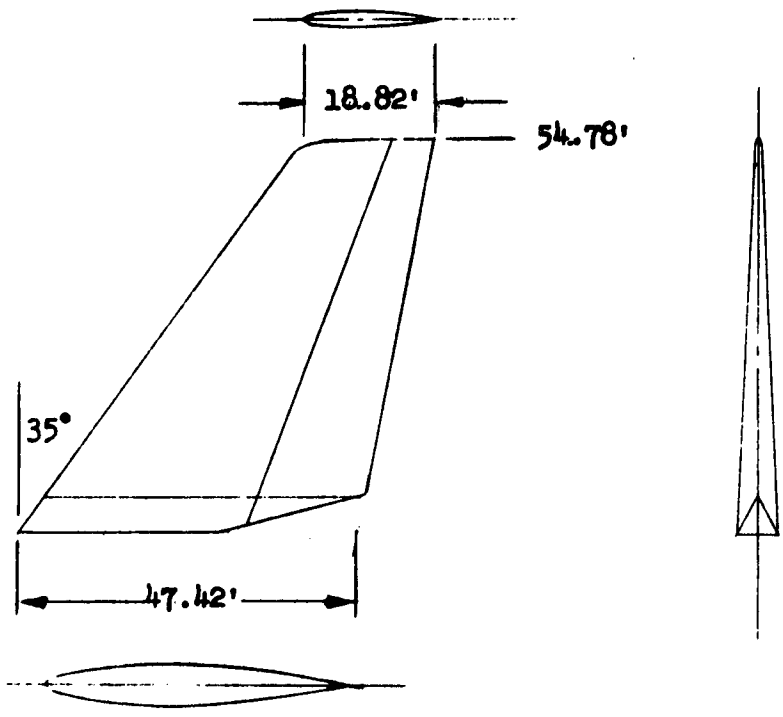


FIGURE 11. VERTICAL TAIL - V8

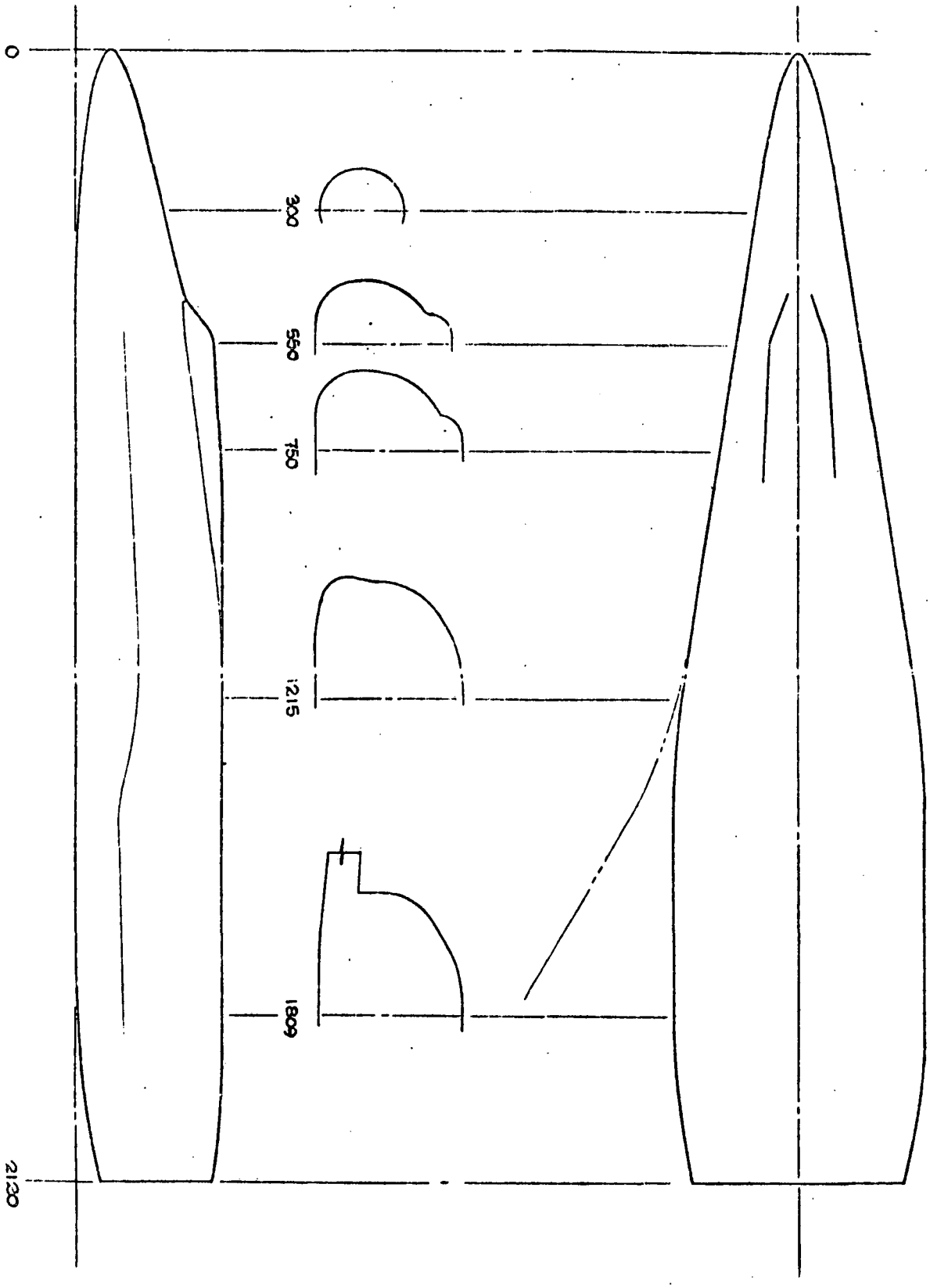


FIGURE 12. BODY B5 9992-134 B CONFIGURATION

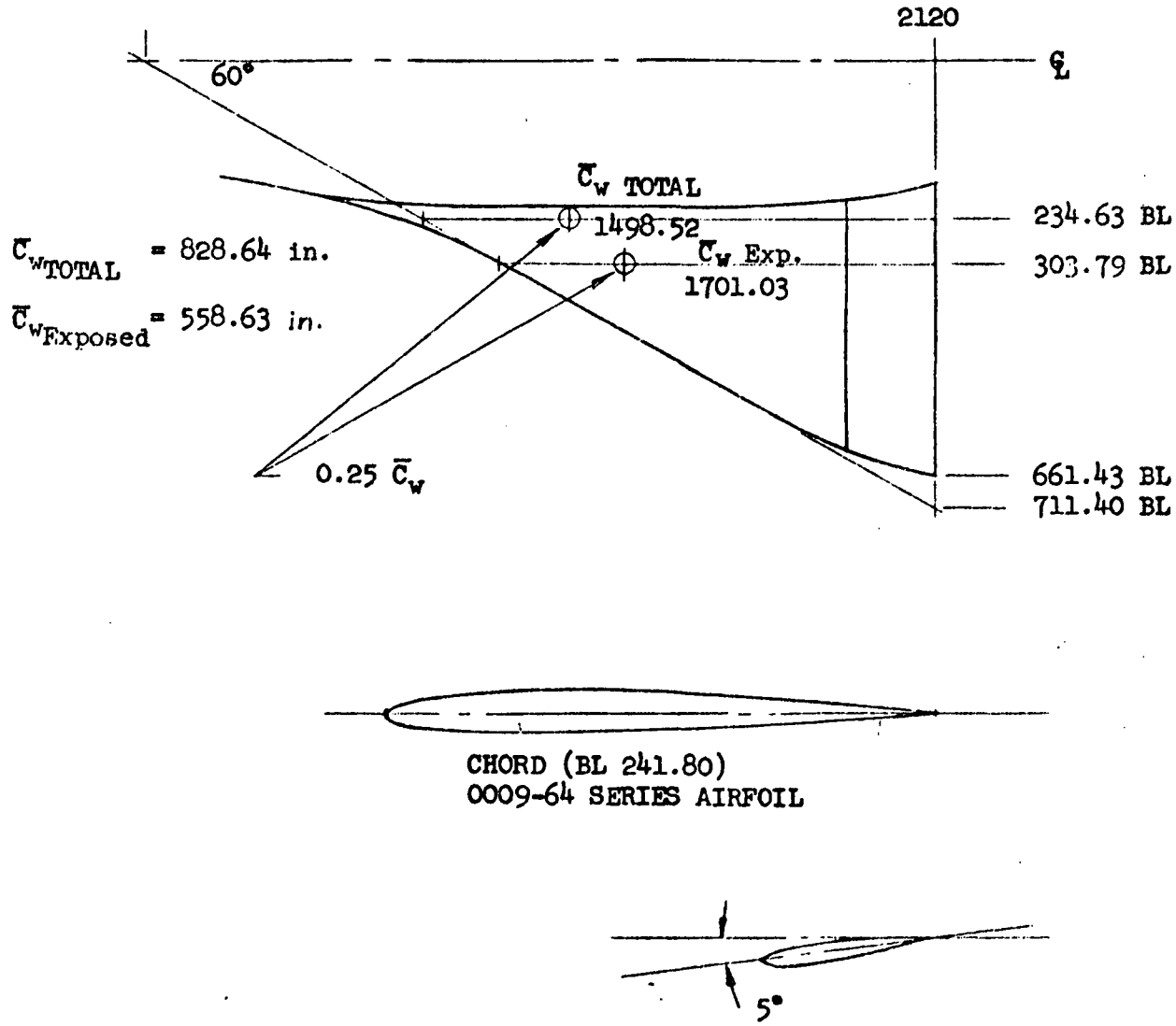


FIGURE 13. WING W_{17} 9992-134 D Configuration

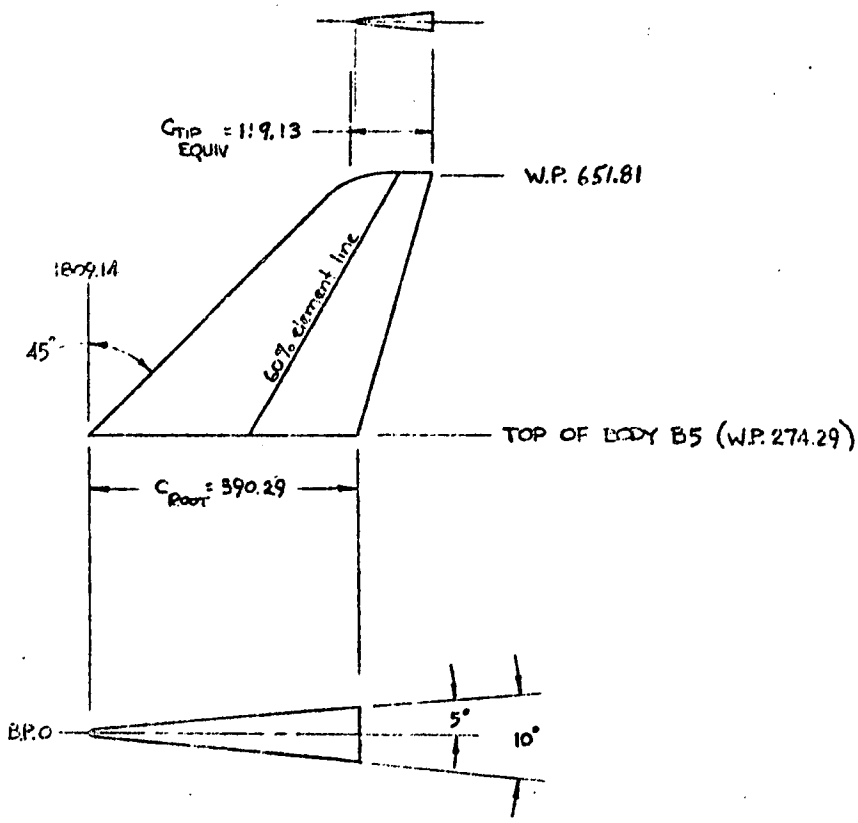
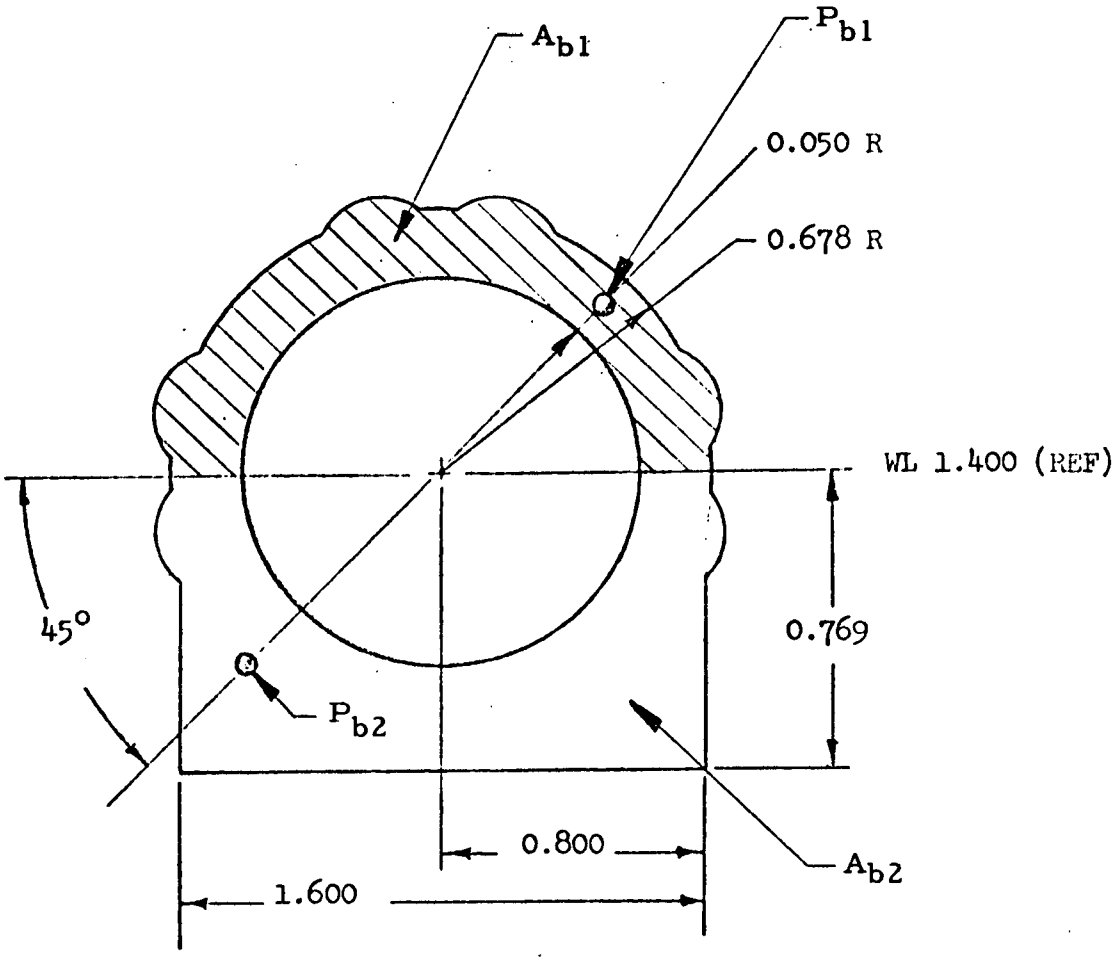


FIGURE 14.
VERTICAL STABILIZER V17



View Looking Forward

NOTE: Location of pressure taps may vary slightly as installation will be made during test setup.

FIGURE 15. BOOSTER BASE PRESSURE ORIFICE LOCATIONS

Notes:

1. Positive directions of force coefficients moment coefficients, and angles are indicated by arrows.

2. For clarity, origins of wind and stability axes have been displaced from the center of gravity.

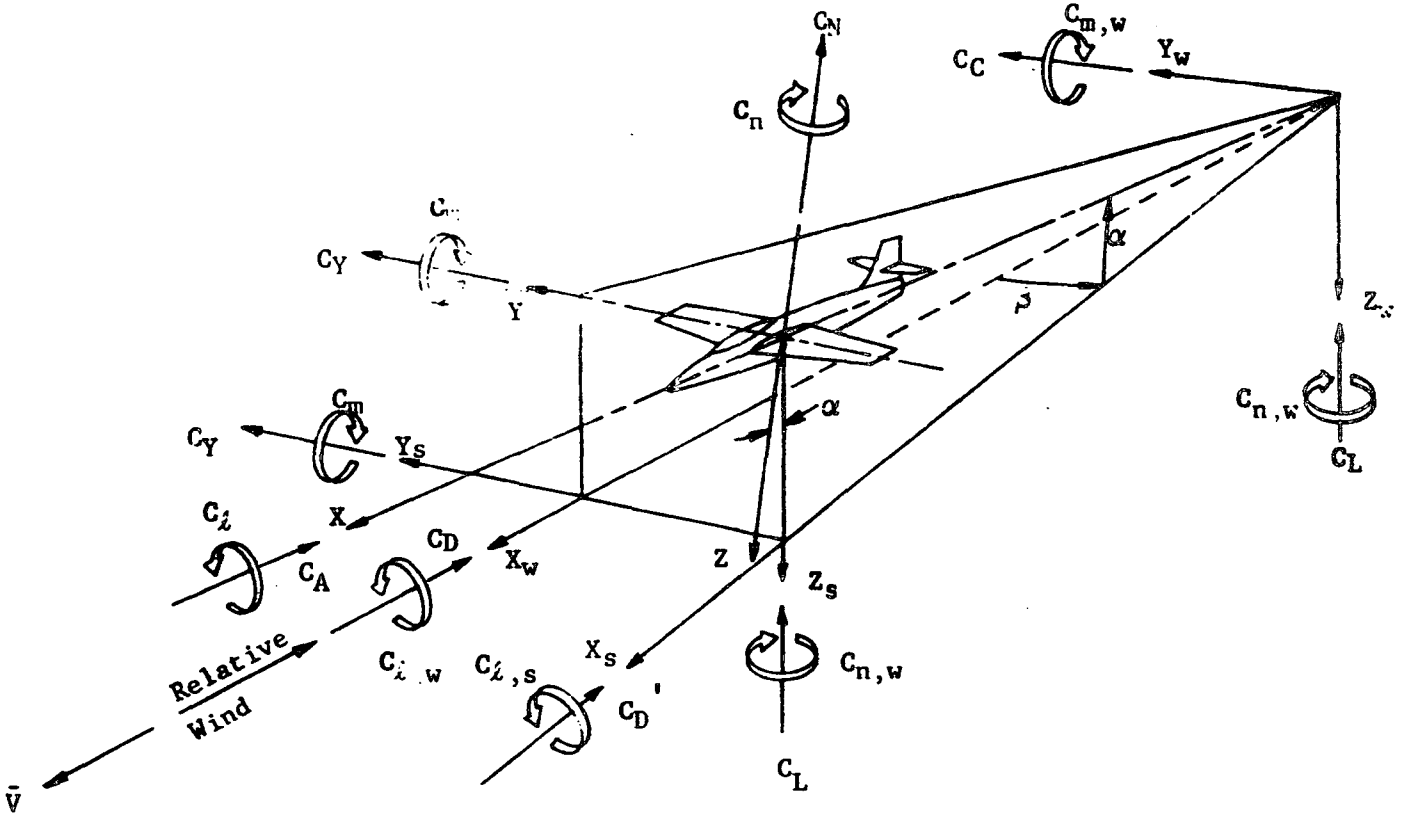
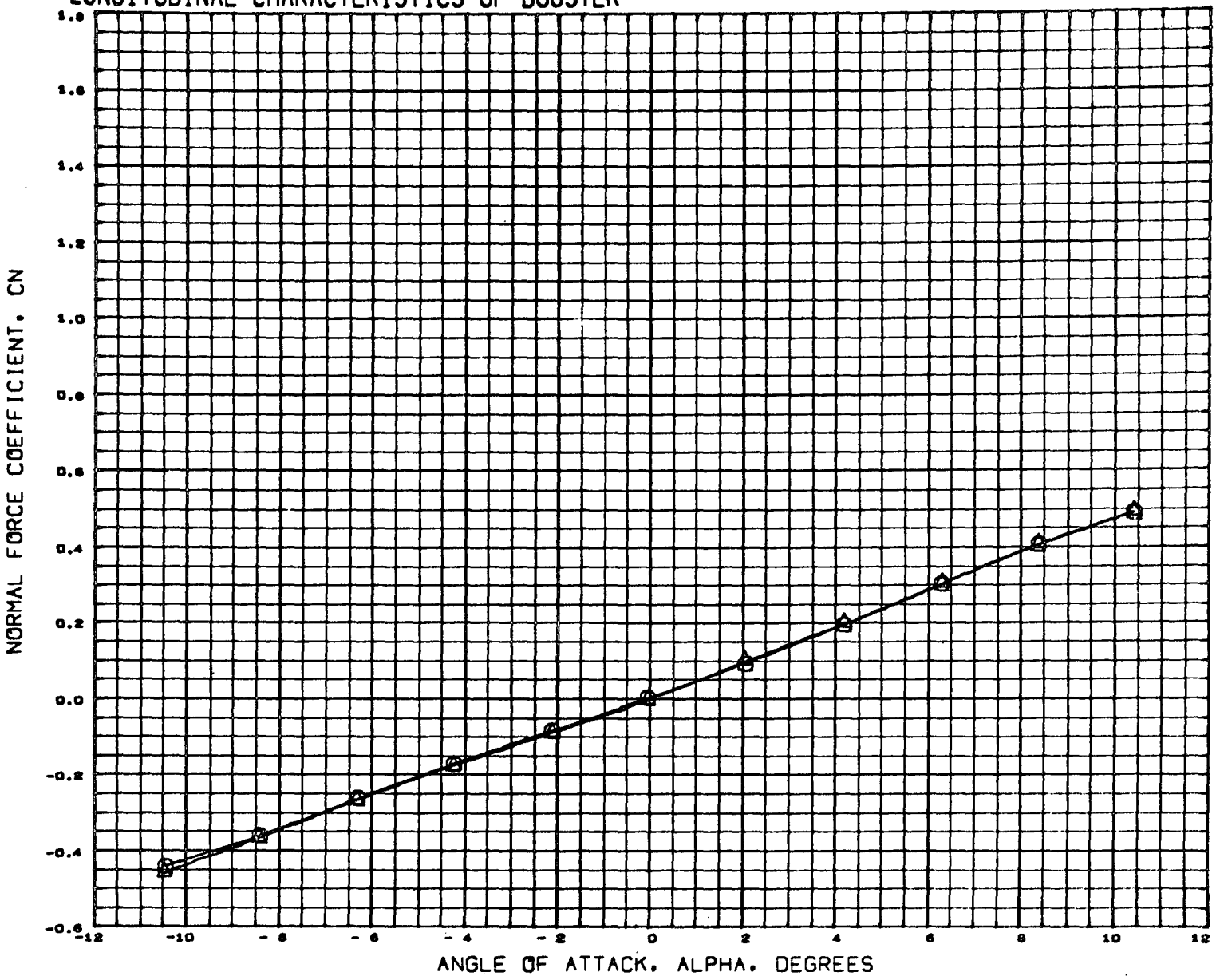


Figure 16. Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sideslip angle

DATA FIGURES

LONGITUDINAL CHARACTERISTICS OF BOOSTER

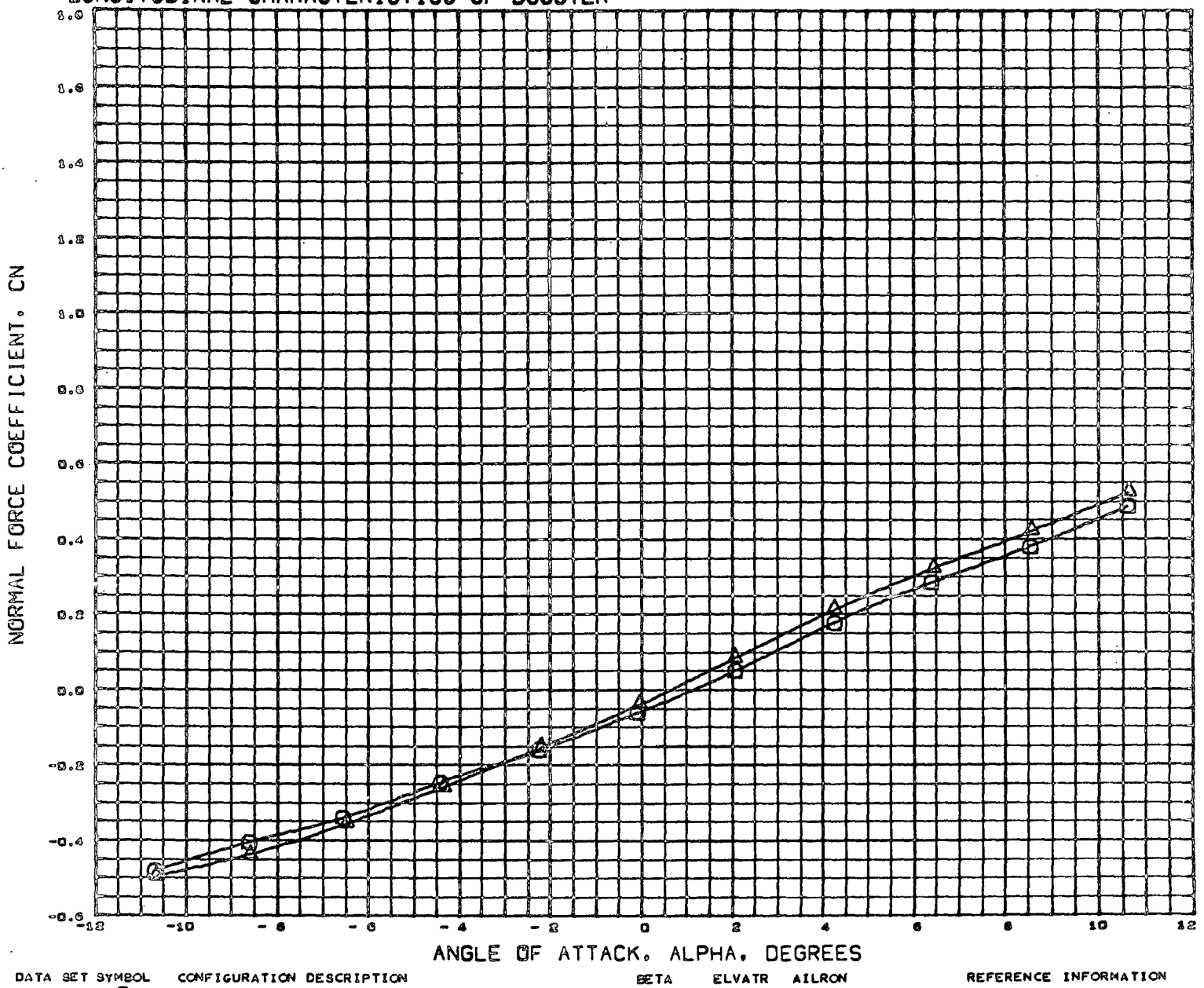


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3206A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

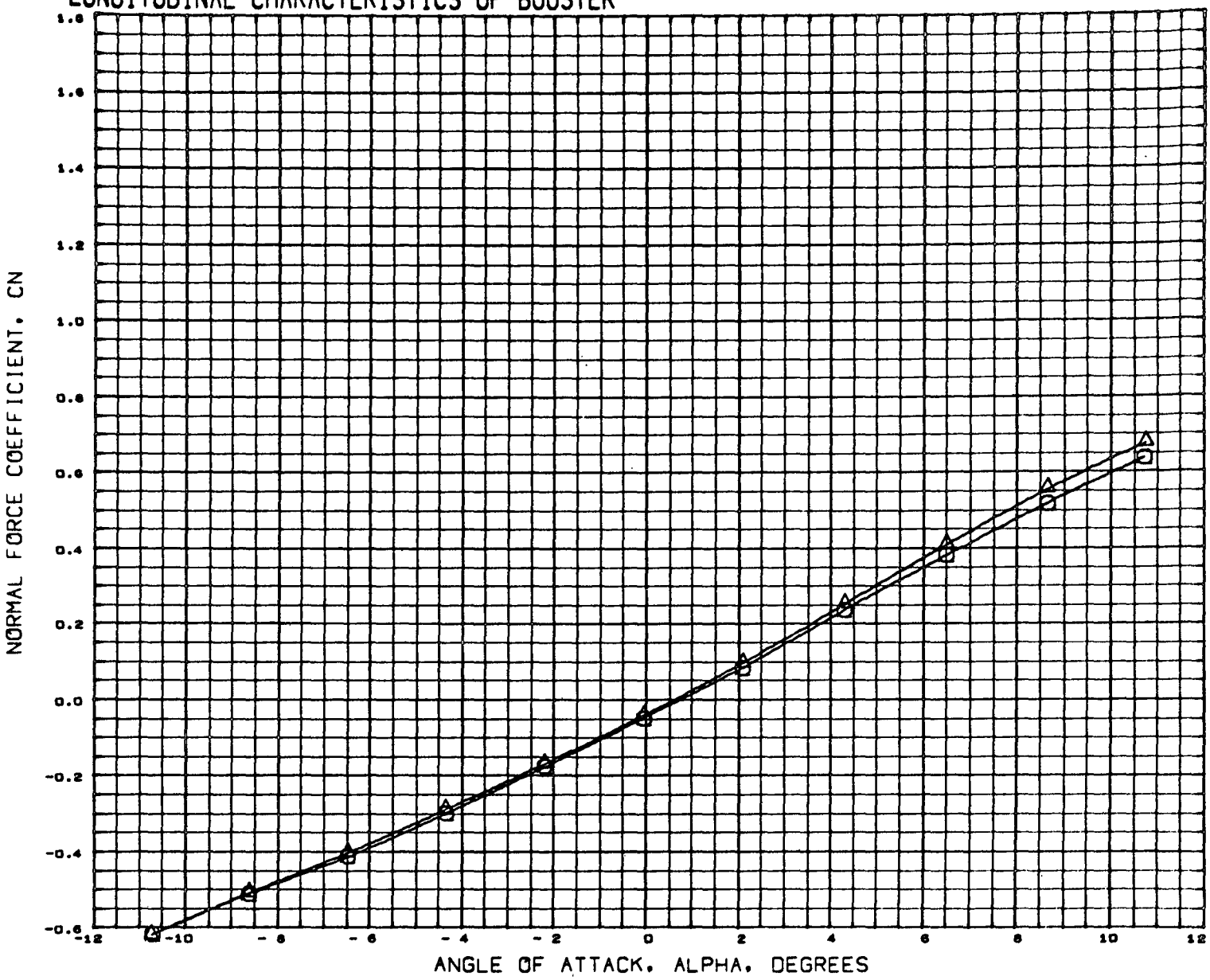


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3206A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

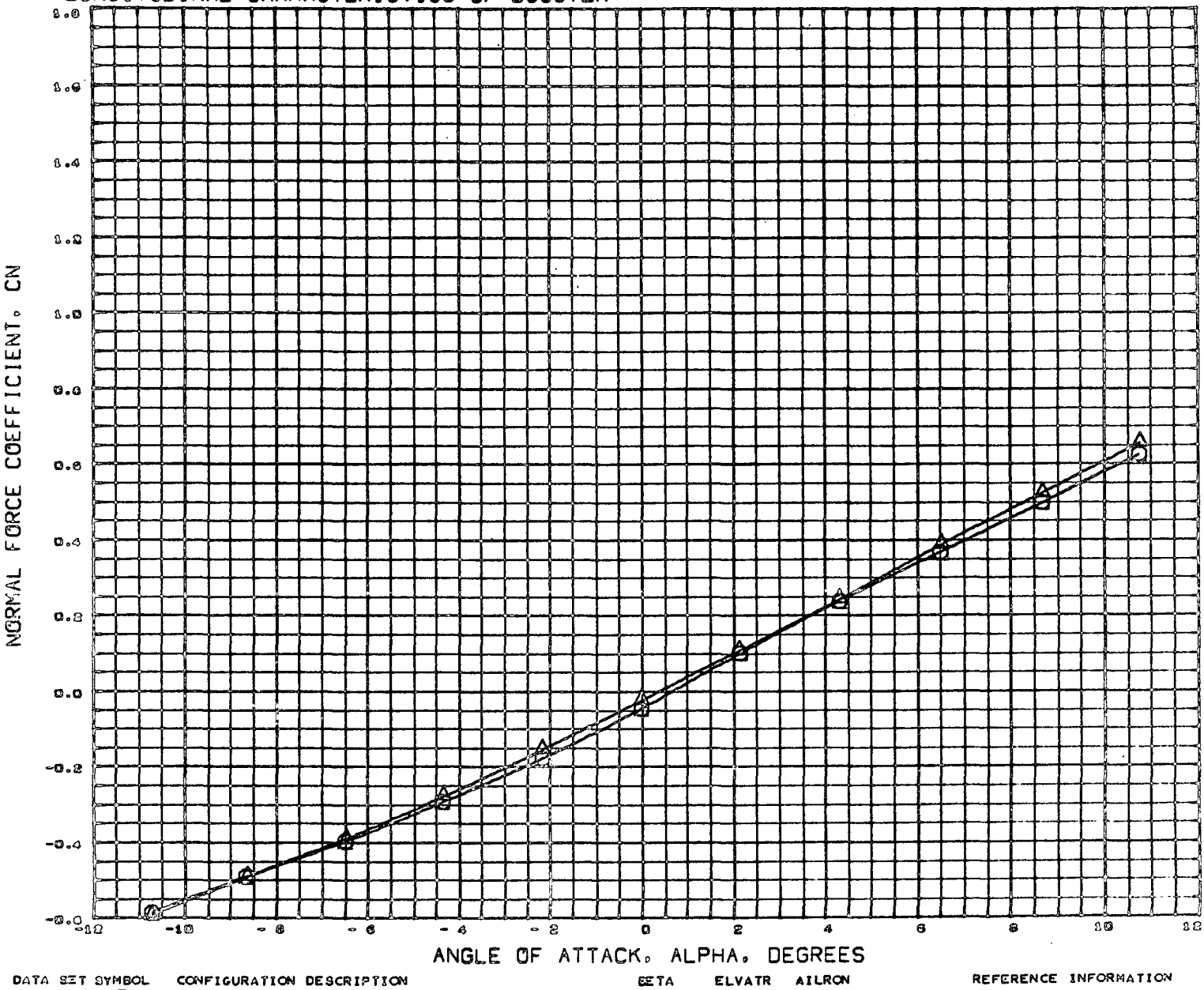


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

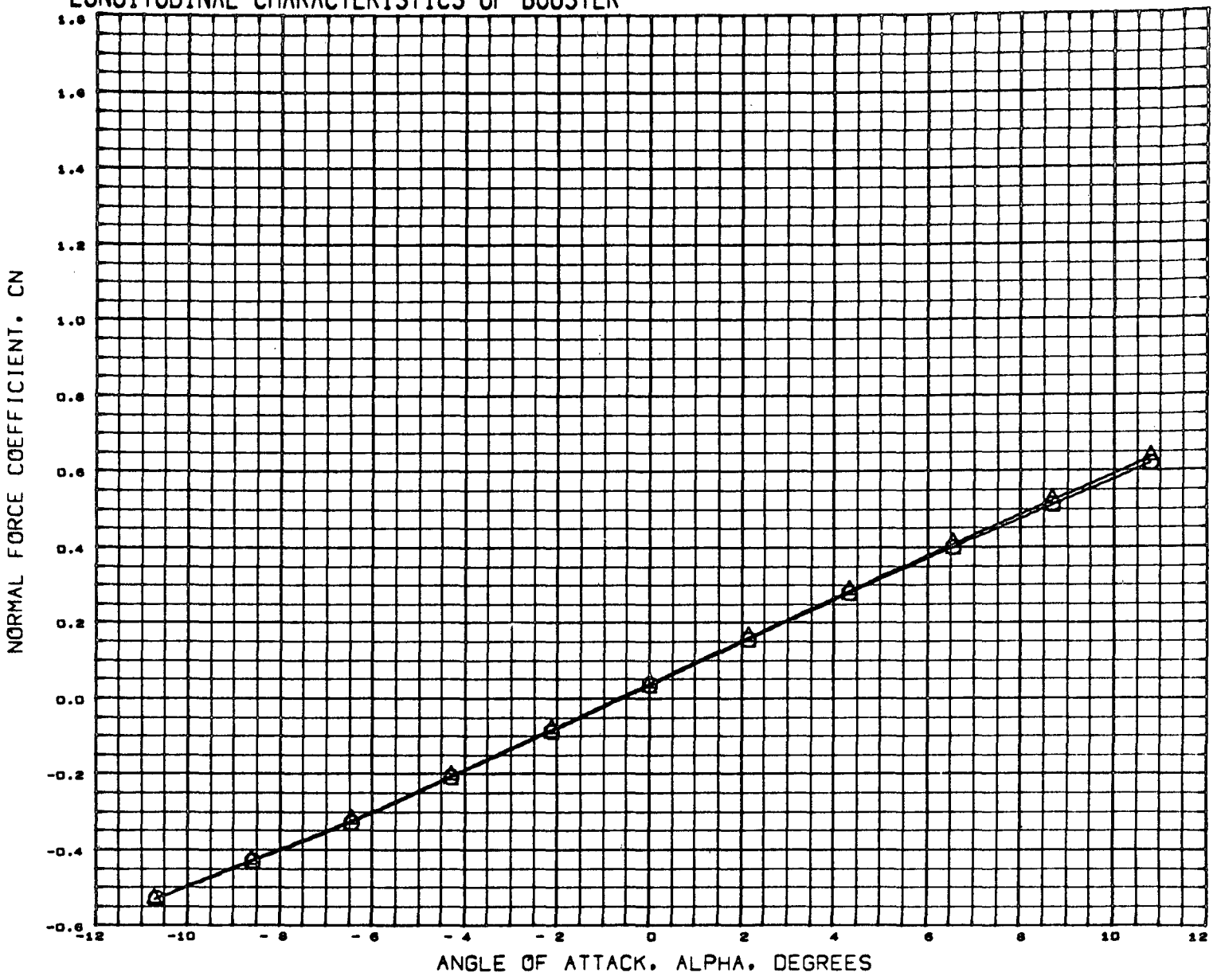


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)		MSFC400 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0095	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



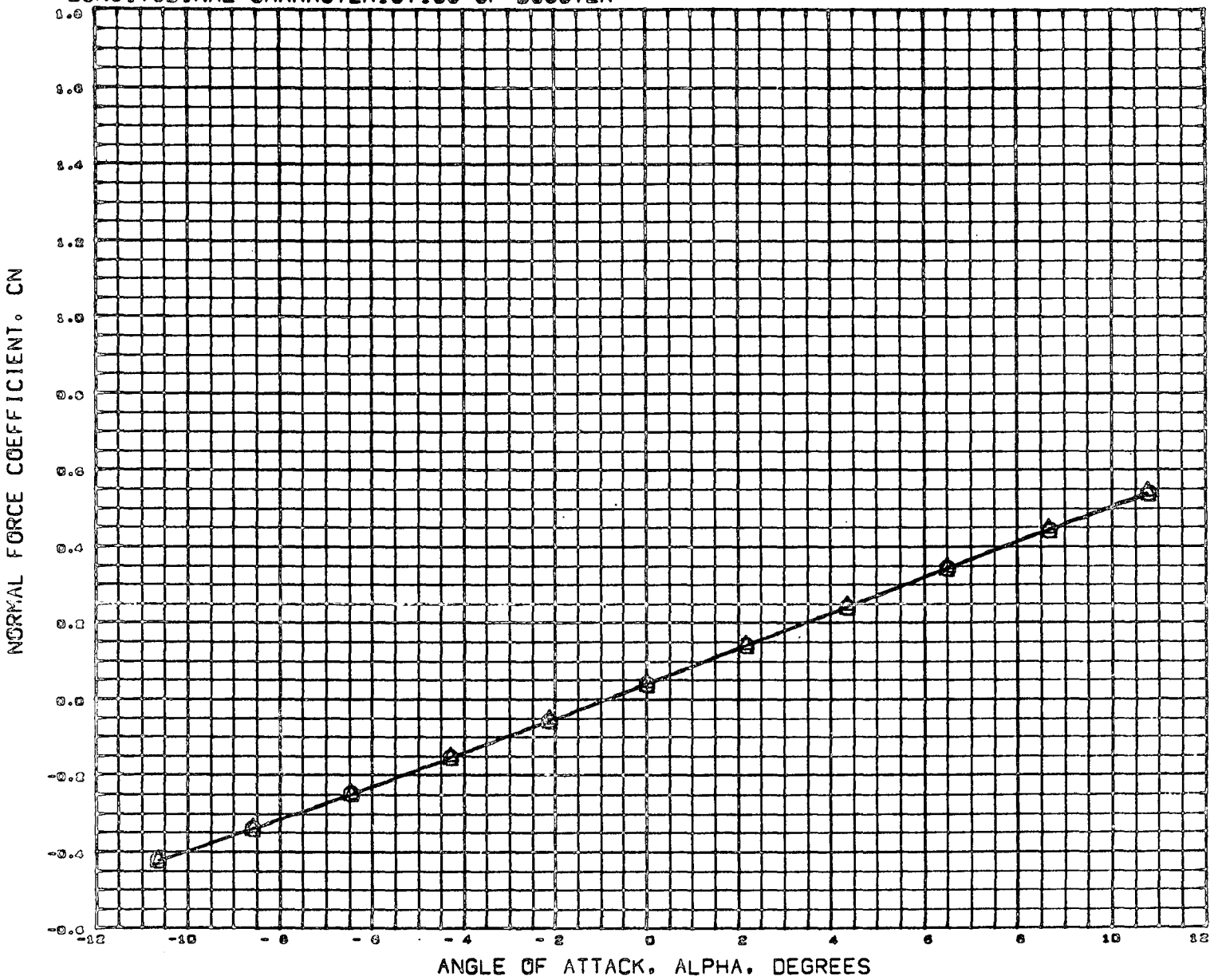
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER 820C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER 820C4BW14V8	0.000	0.000	10.000

MACH 1.197

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

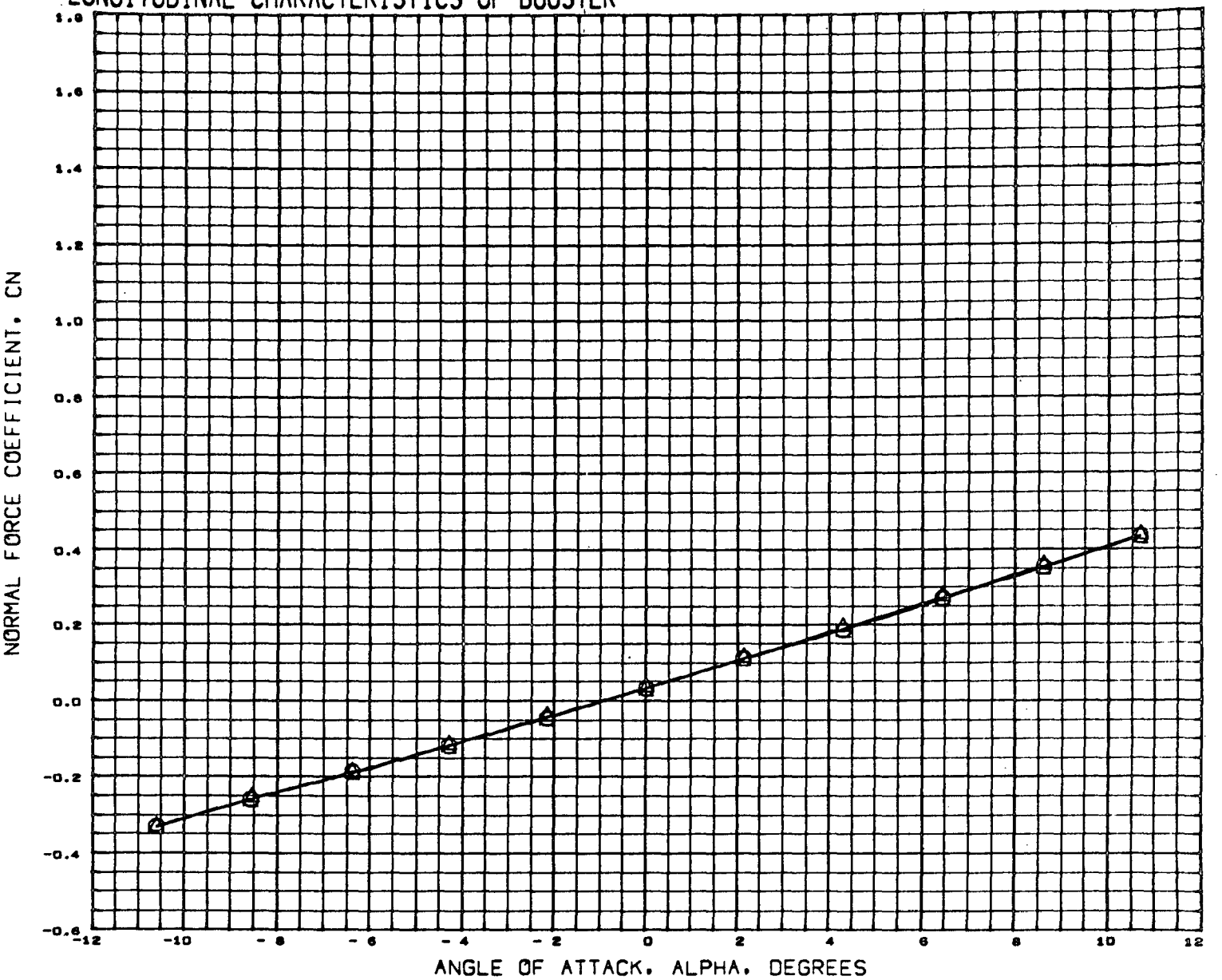


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3203A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3206A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

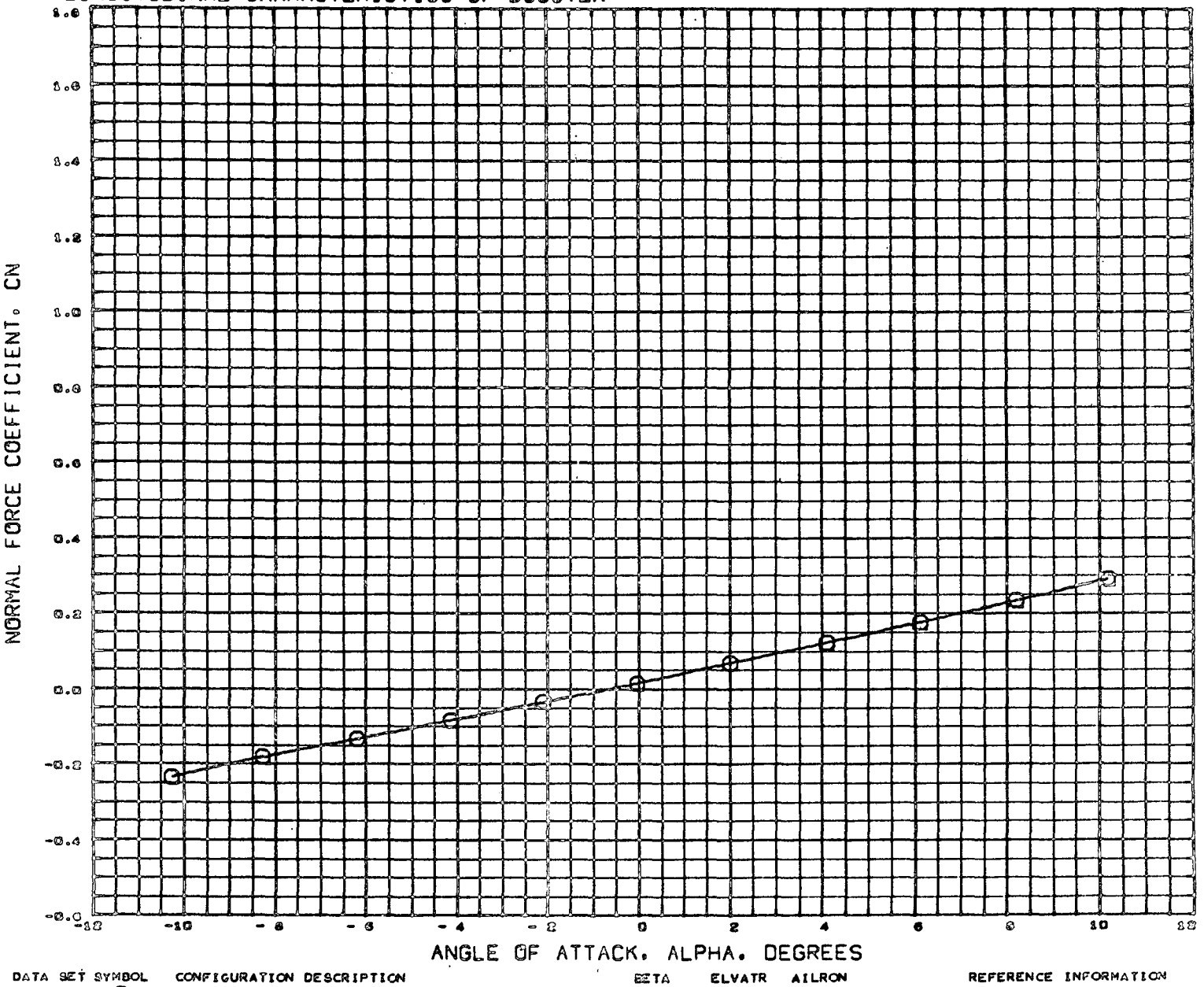


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



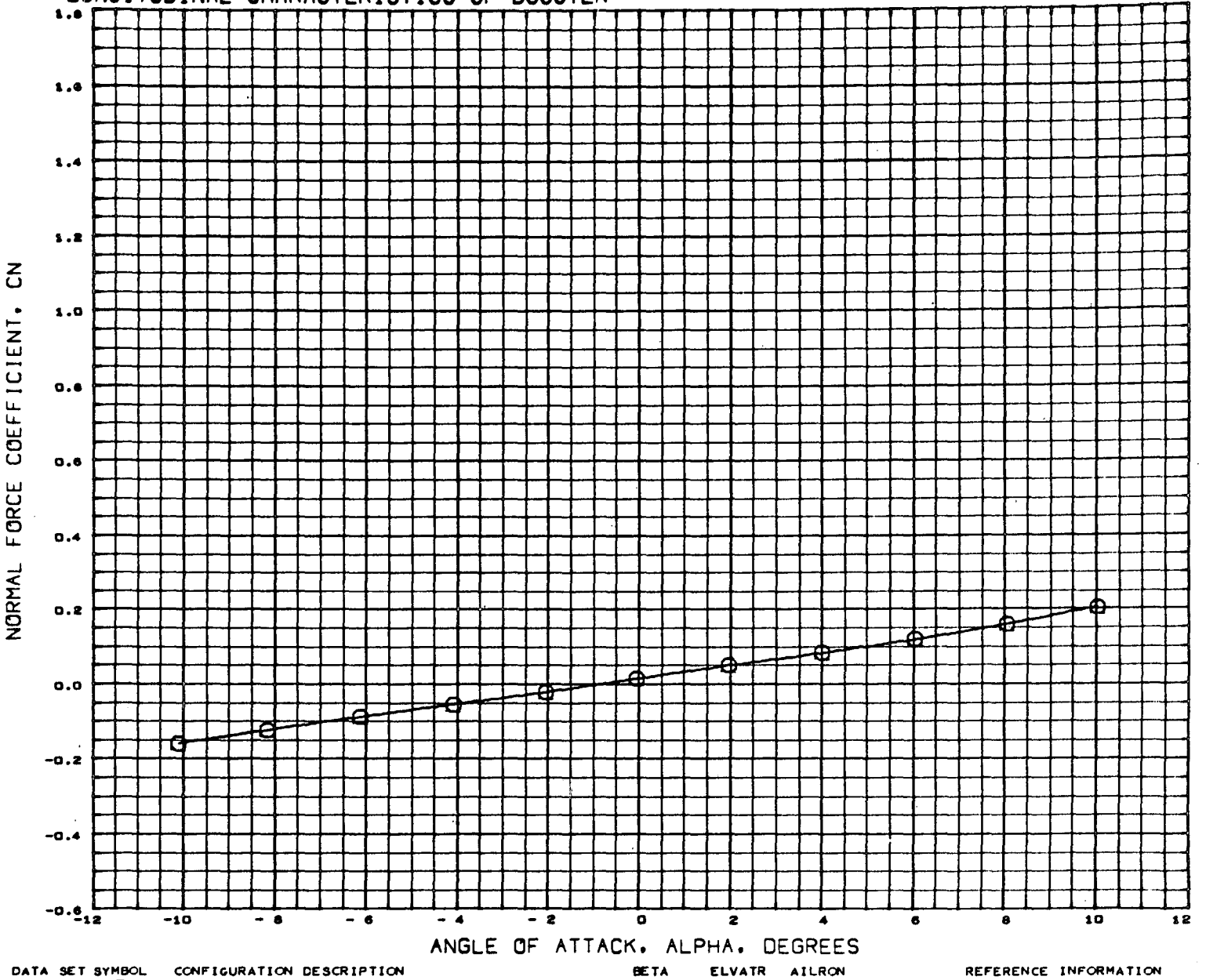
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3209A)		MSFC490 GD DELTA BOOSTER B20C4BW14VC	0.000	0.000	0.000
(H3206A)		DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 2.990

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

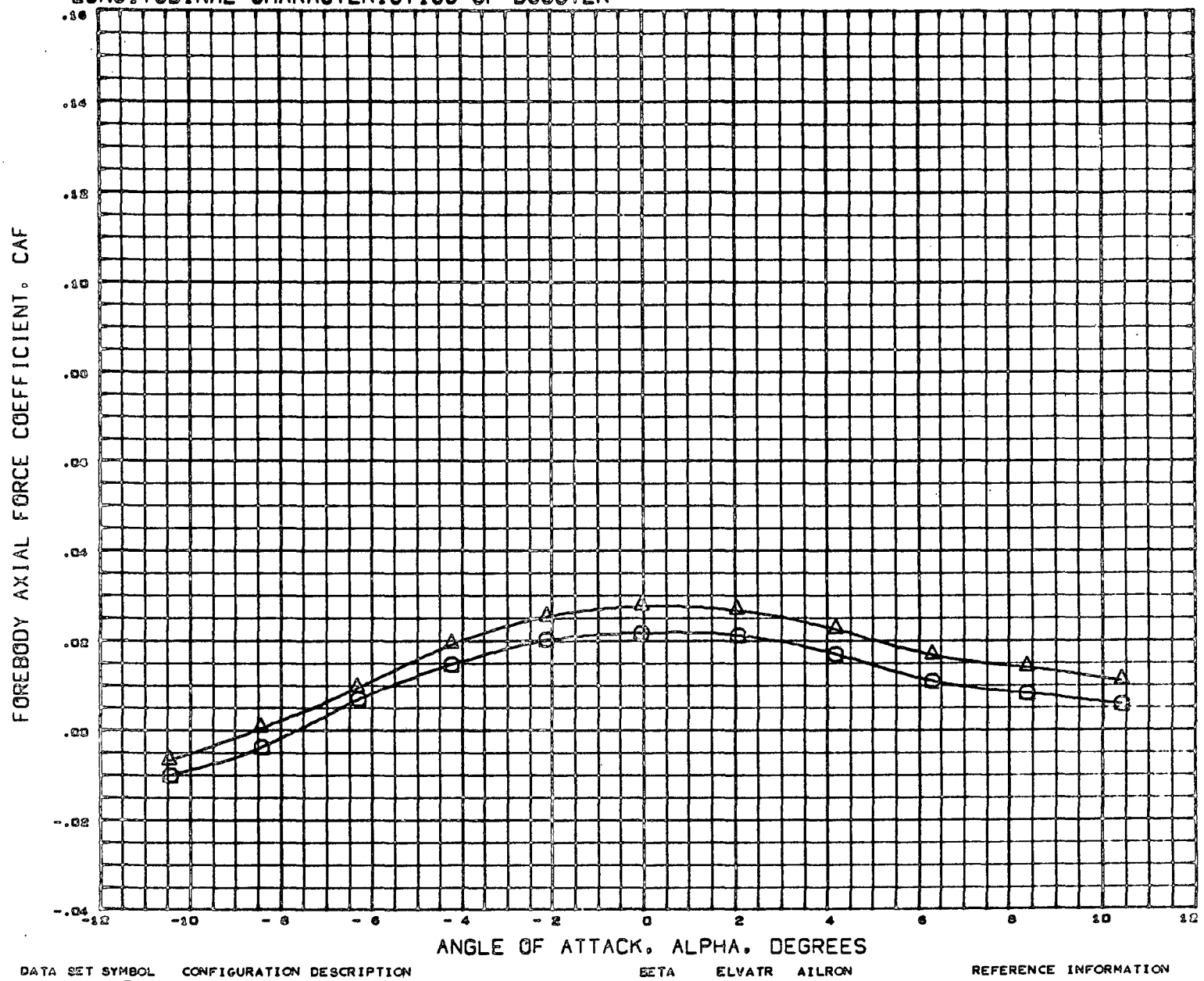


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

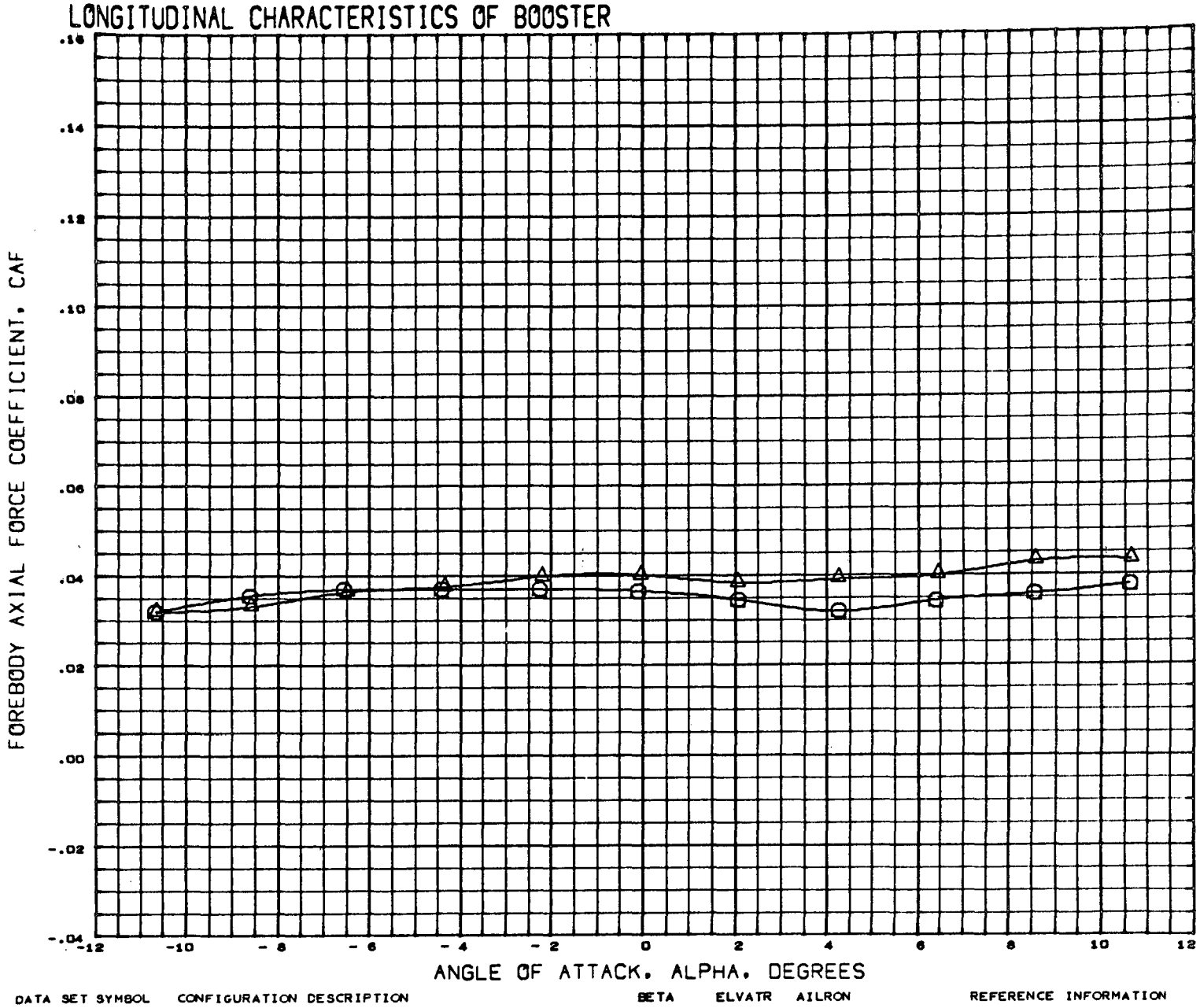


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3206A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

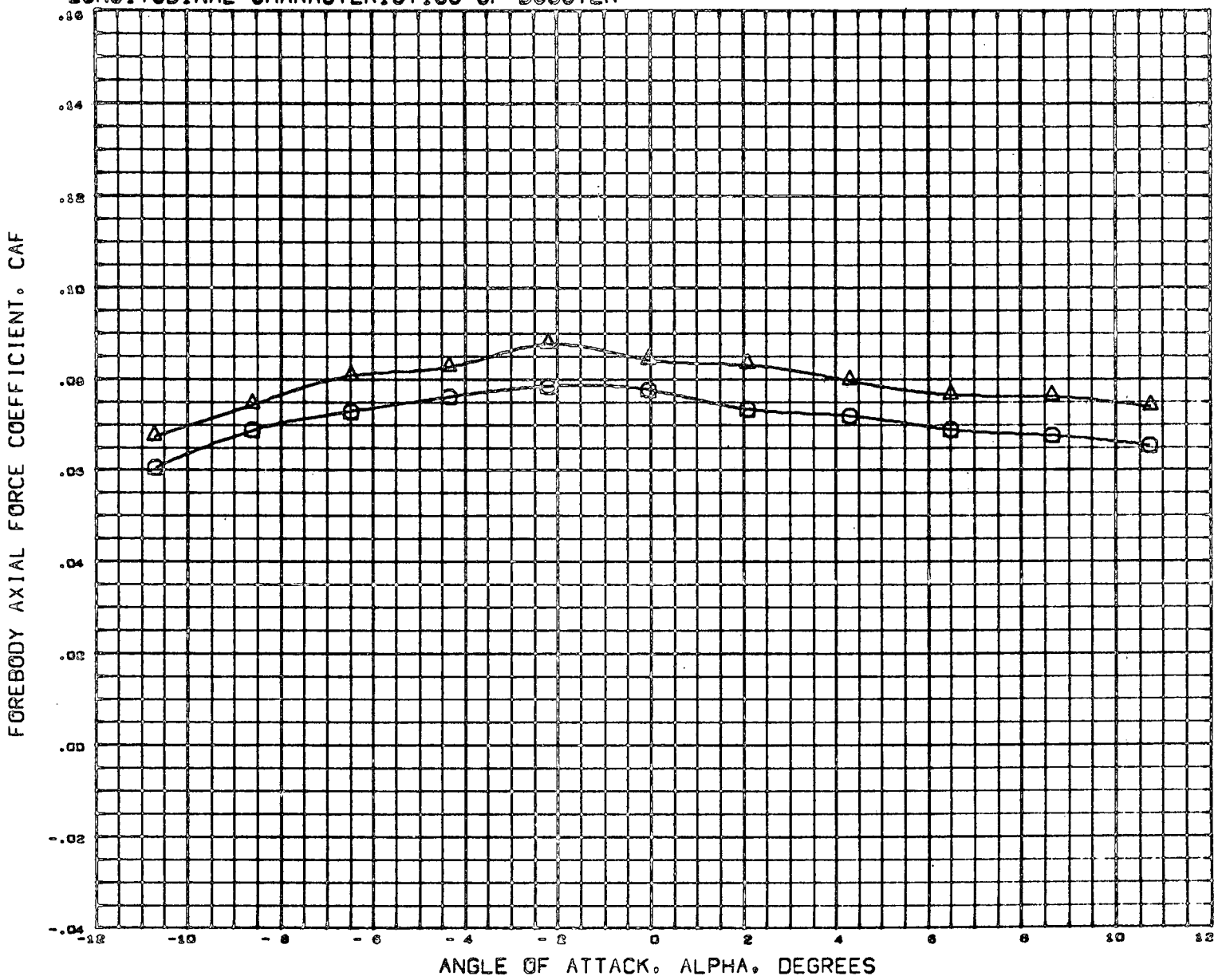


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



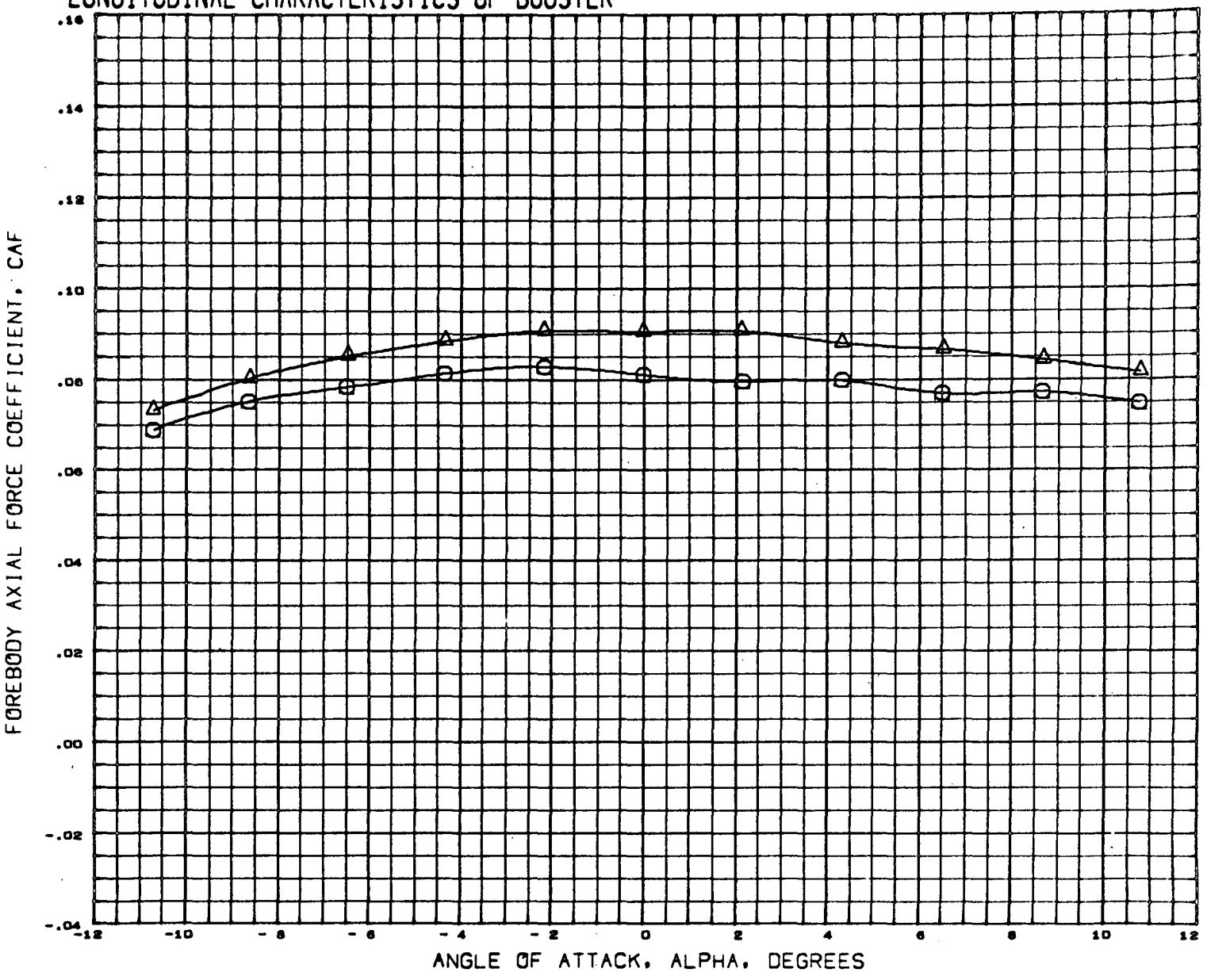
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(MS209A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(MS203A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 0.998

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

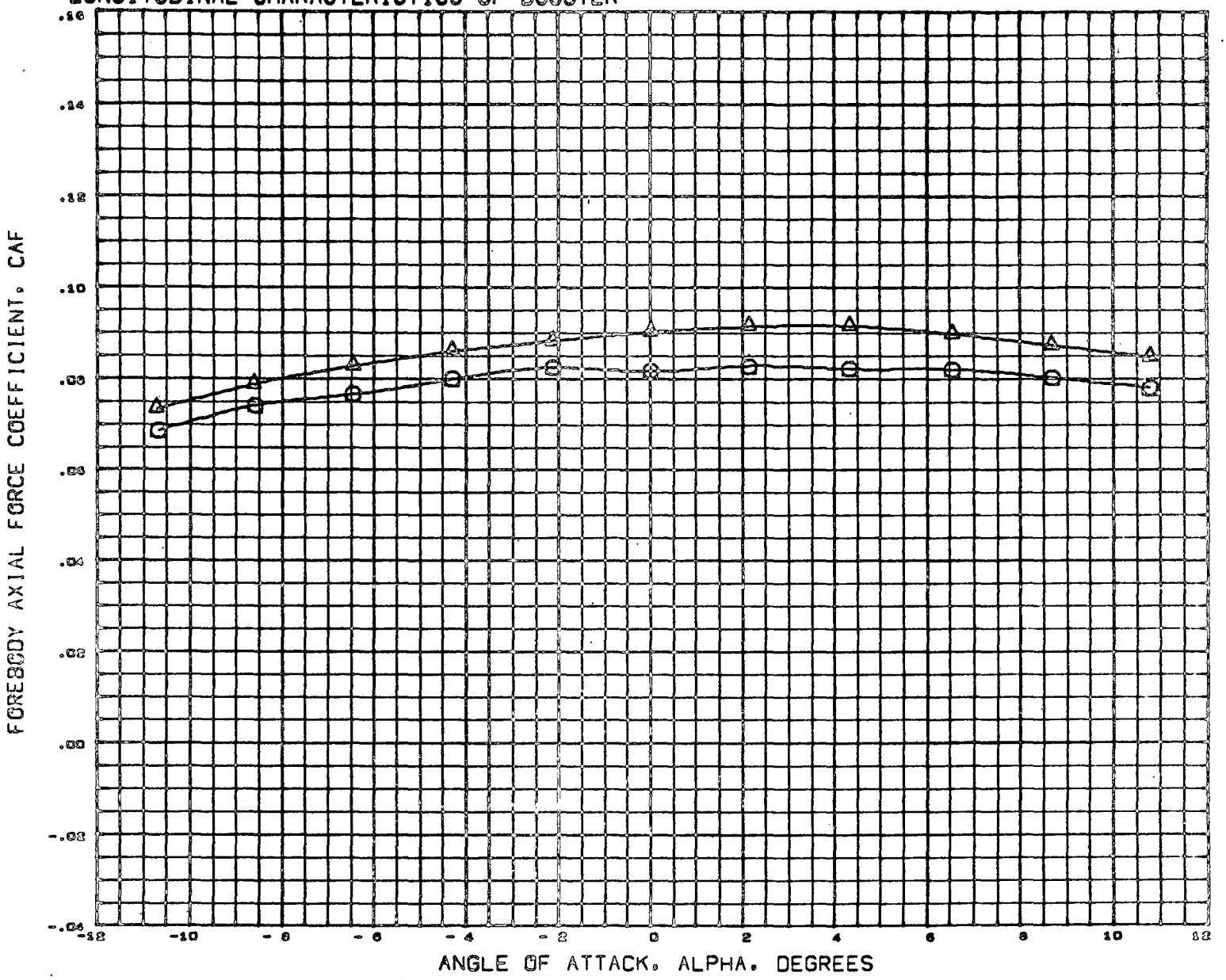


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

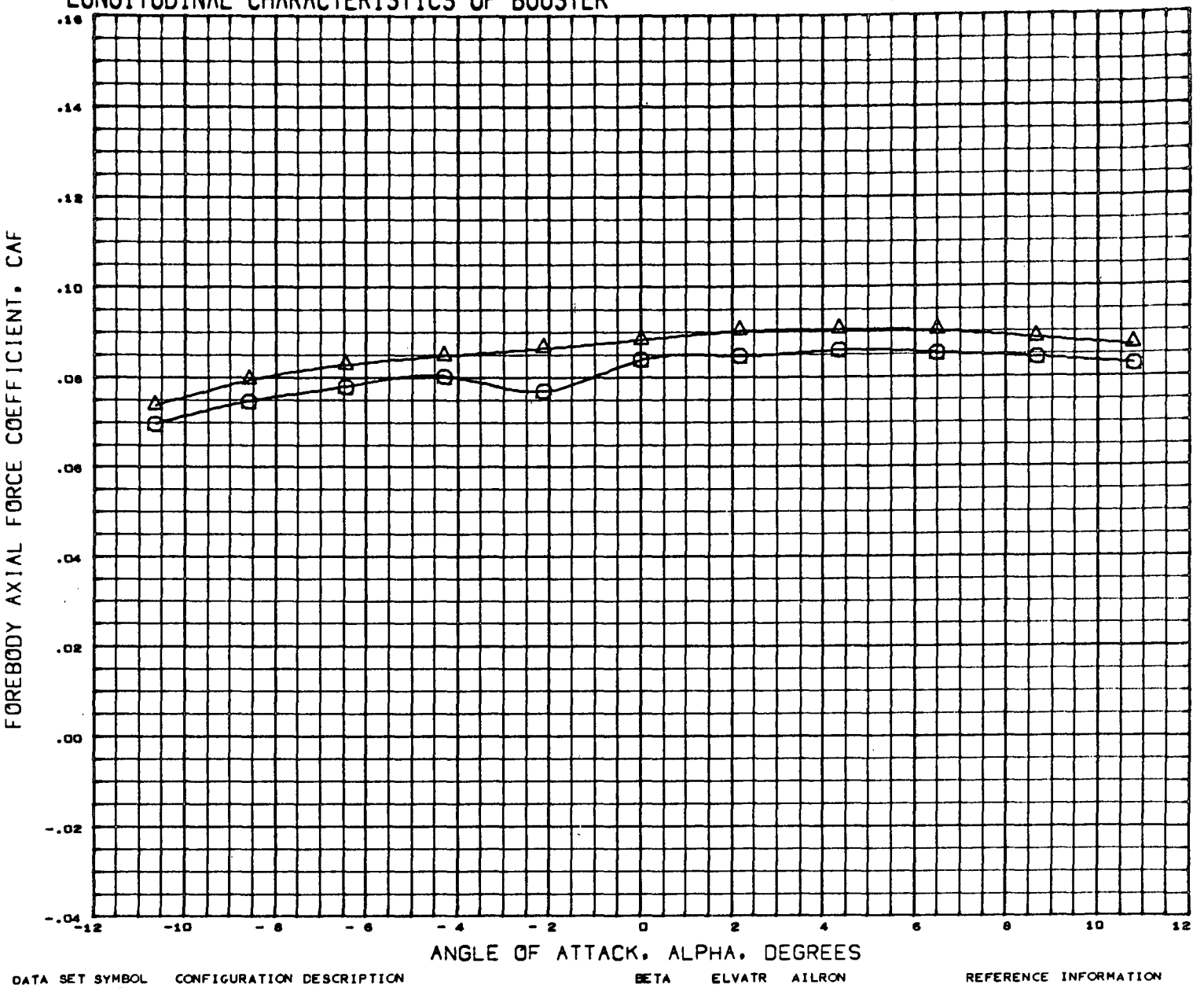


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ETA	ELVATR	AILRON
(MS209A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(MS206A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



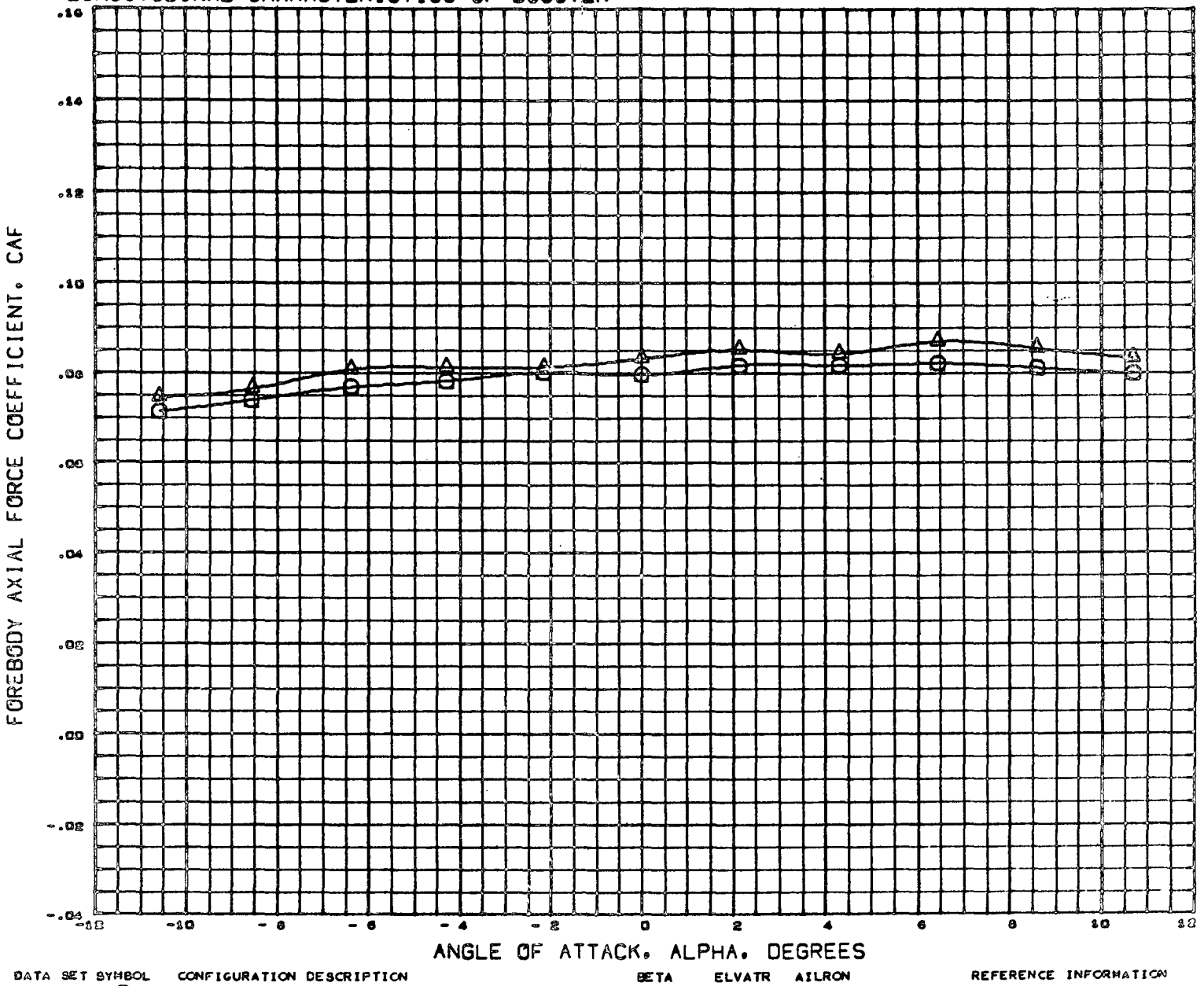
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.466

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

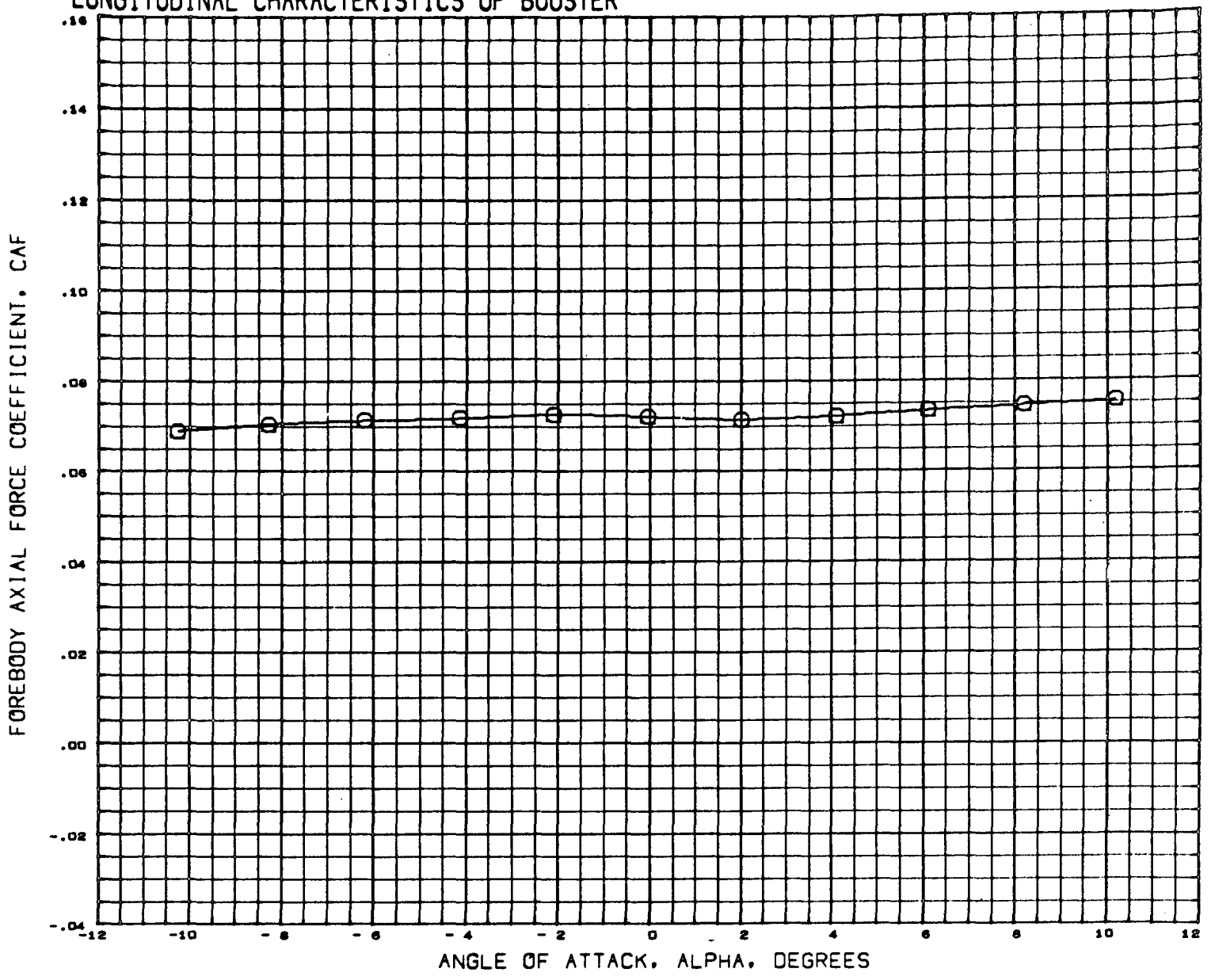


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

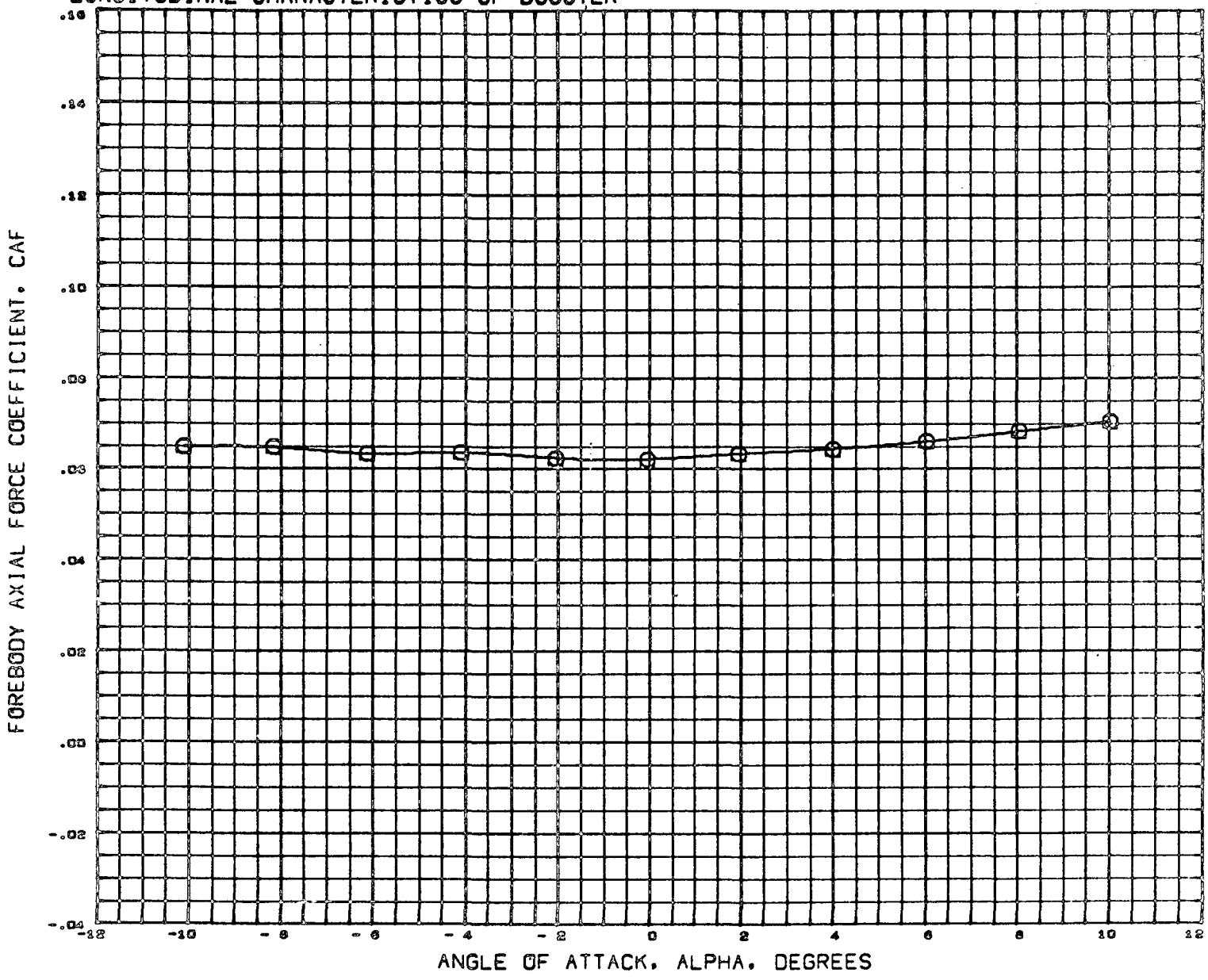


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)		DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



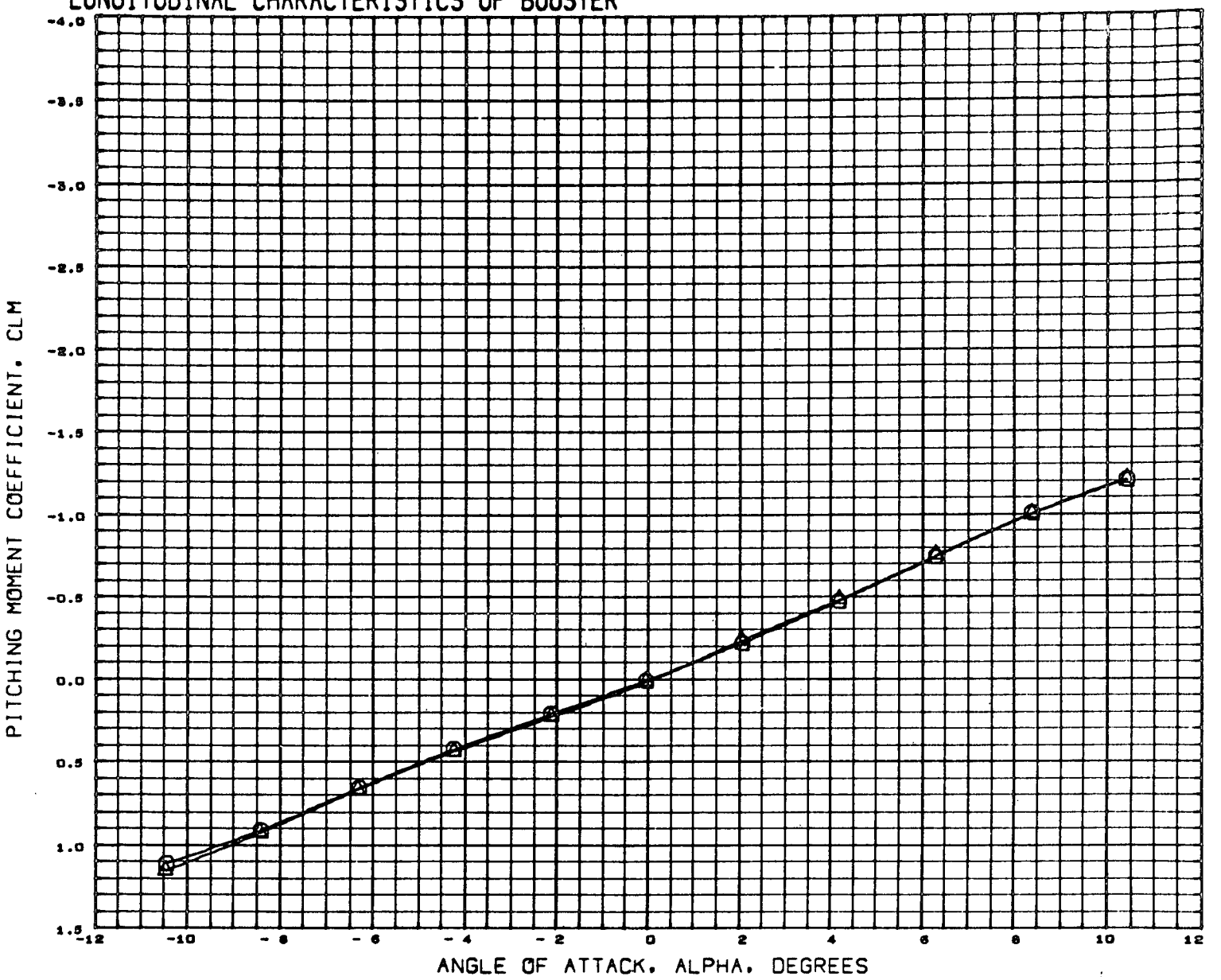
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(MS209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(MS206A)		DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 4.959

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



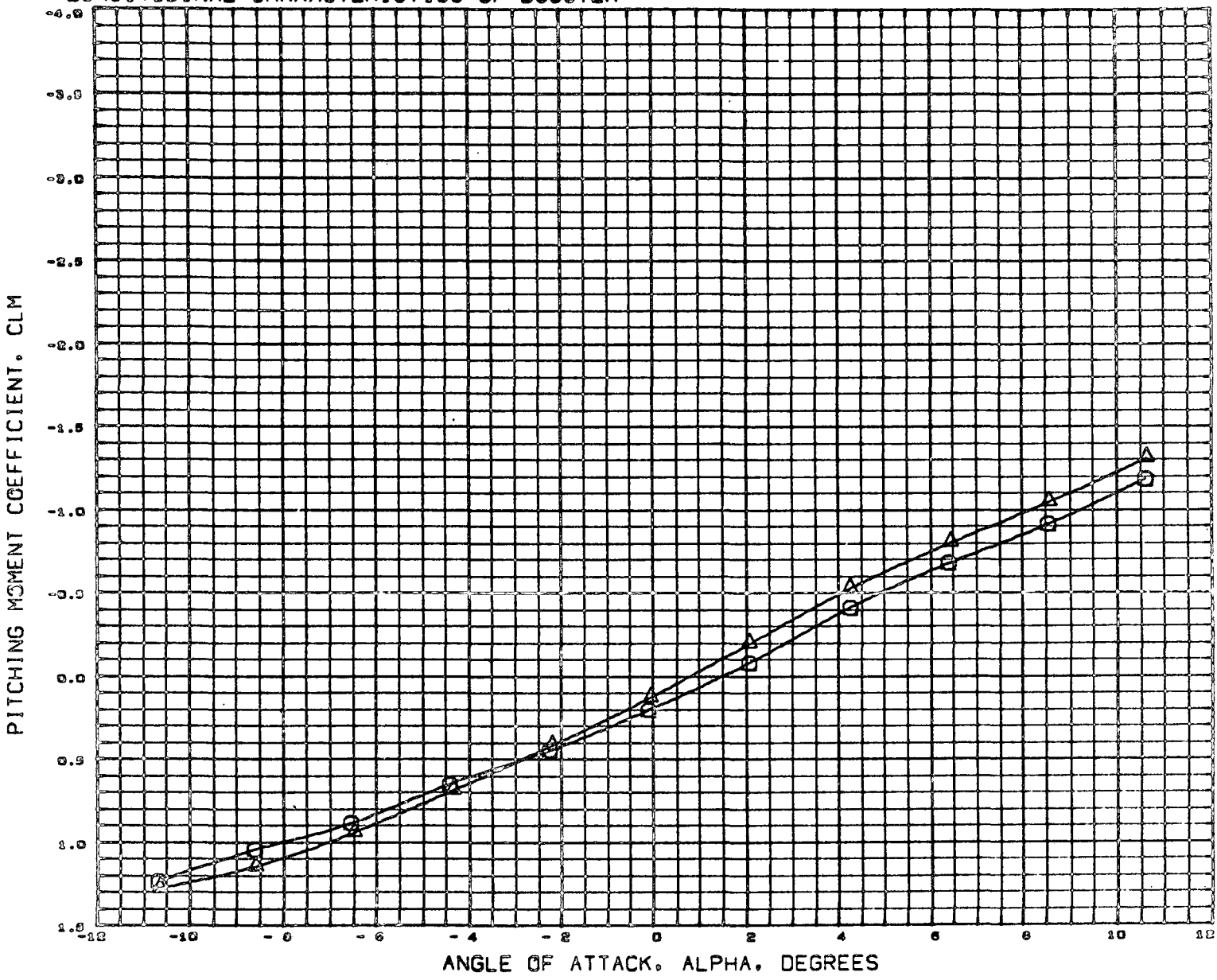
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.606

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

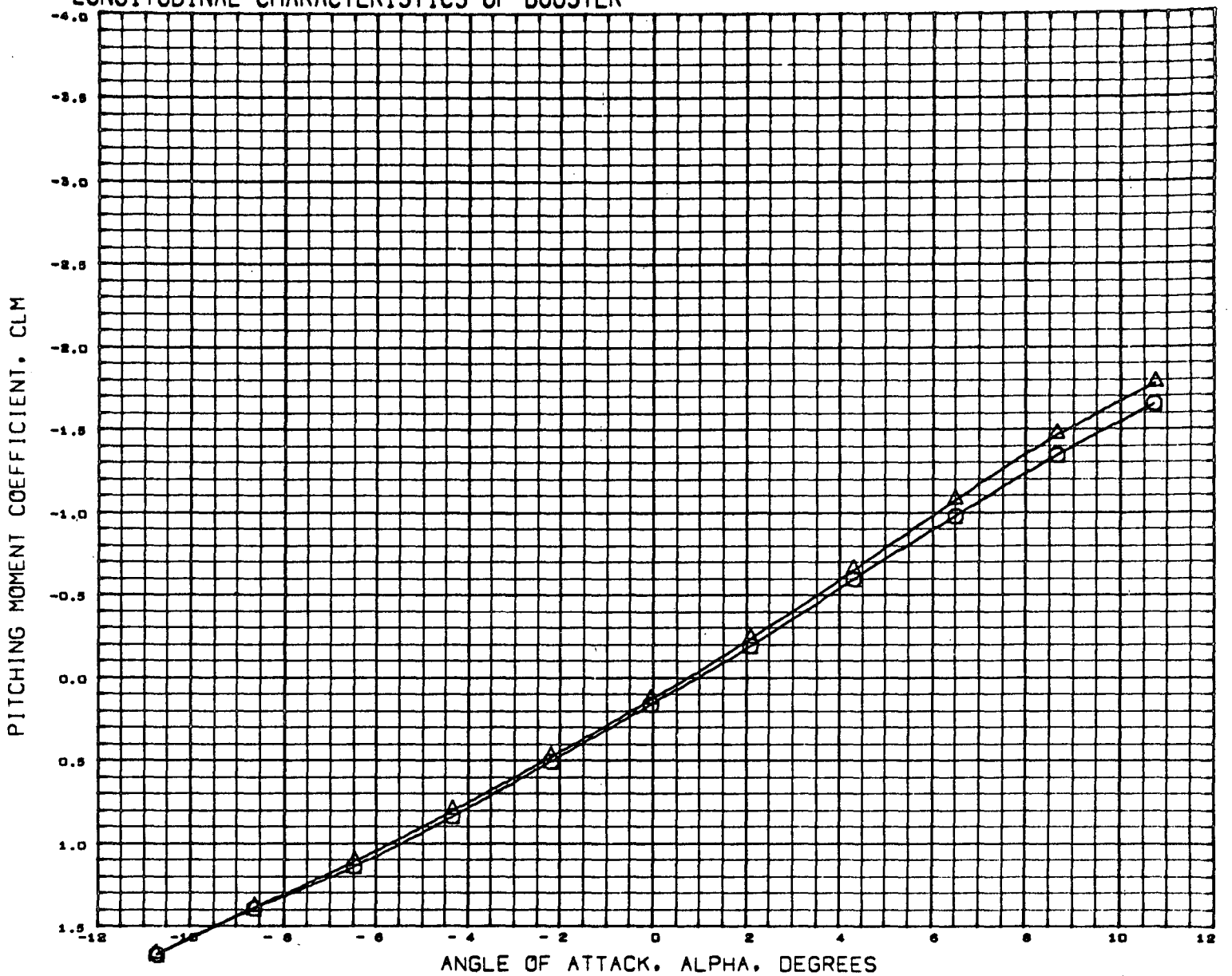


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3206A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0930	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

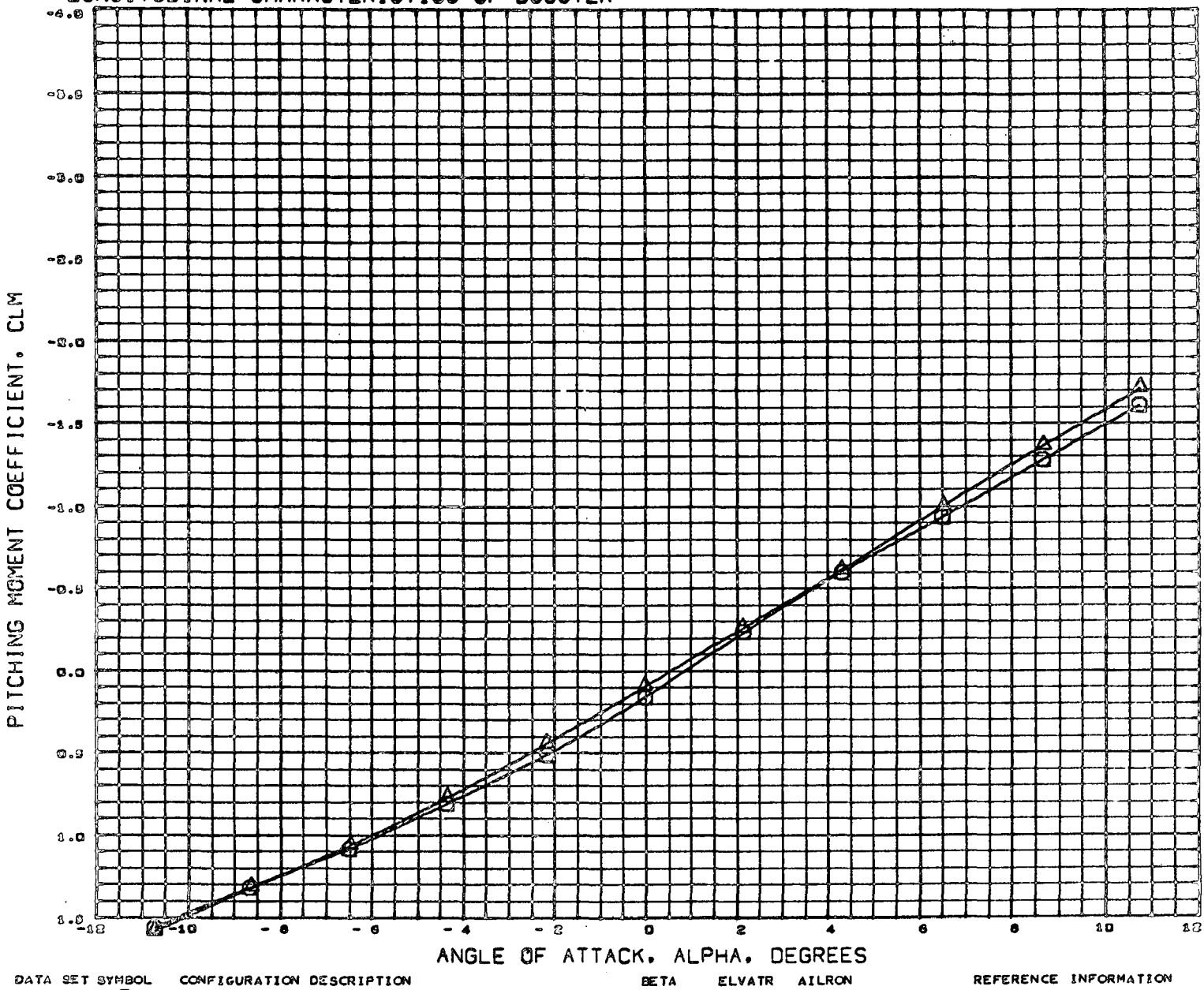


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

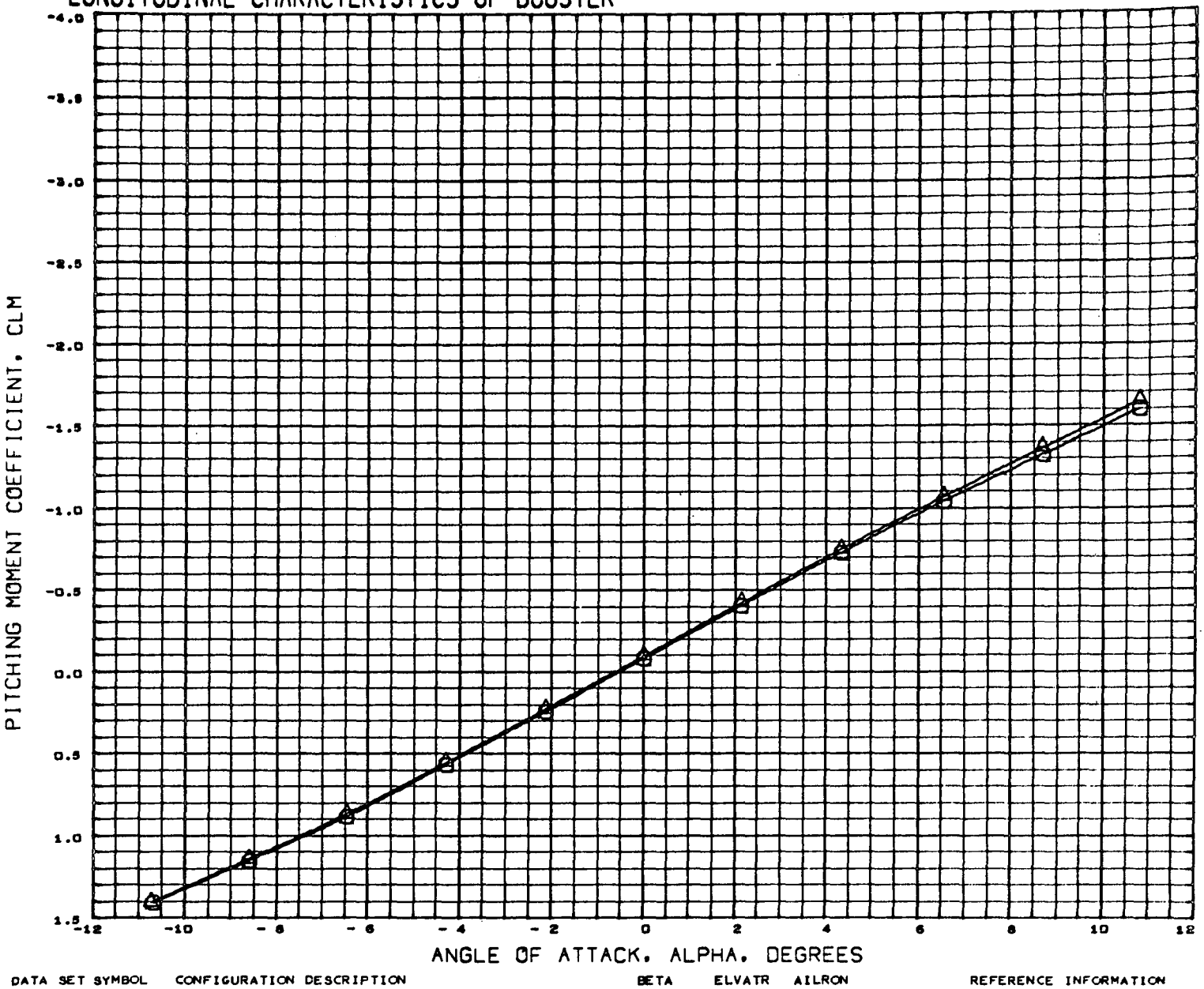


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

MACH 1.097

LONGITUDINAL CHARACTERISTICS OF BOOSTER

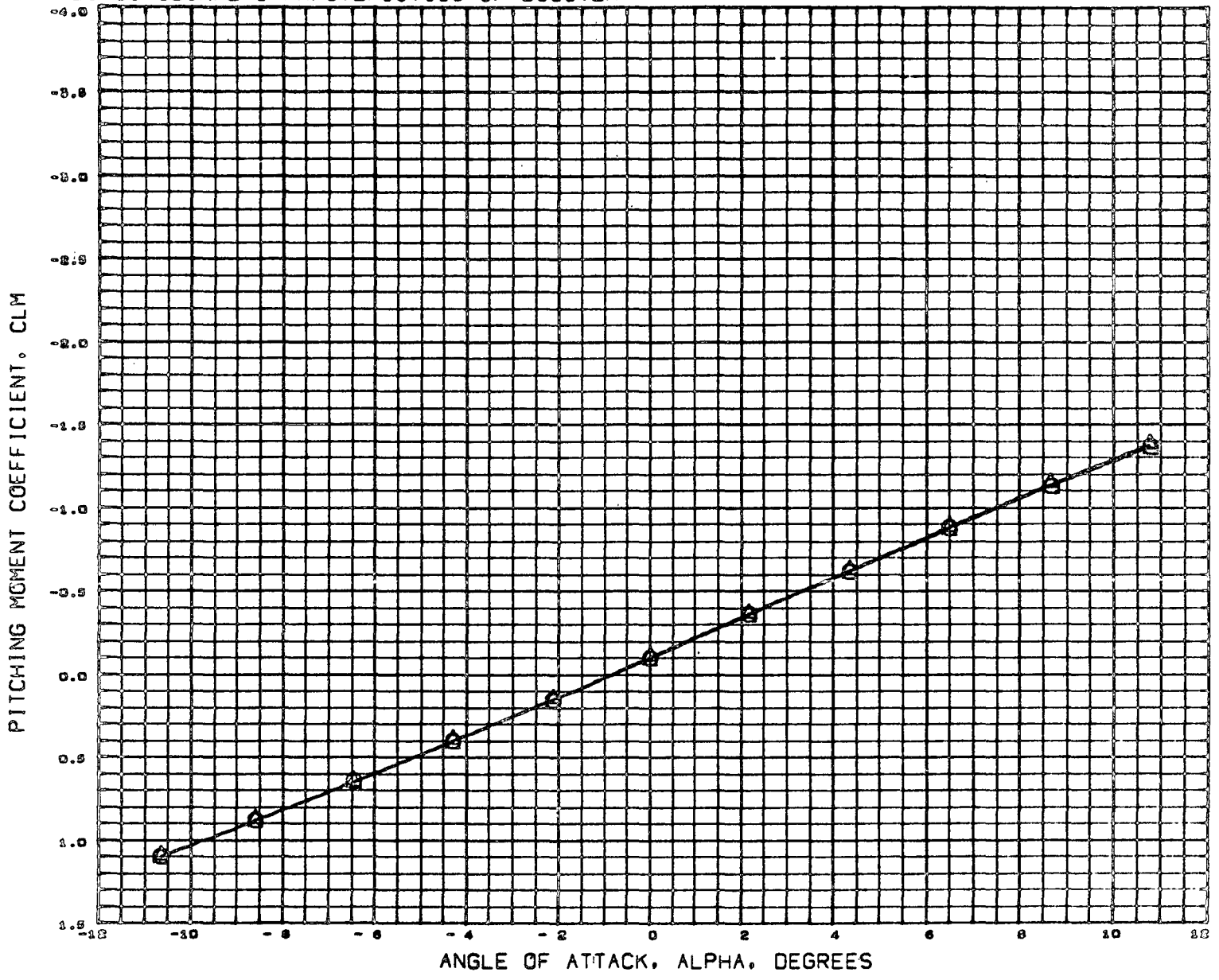


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

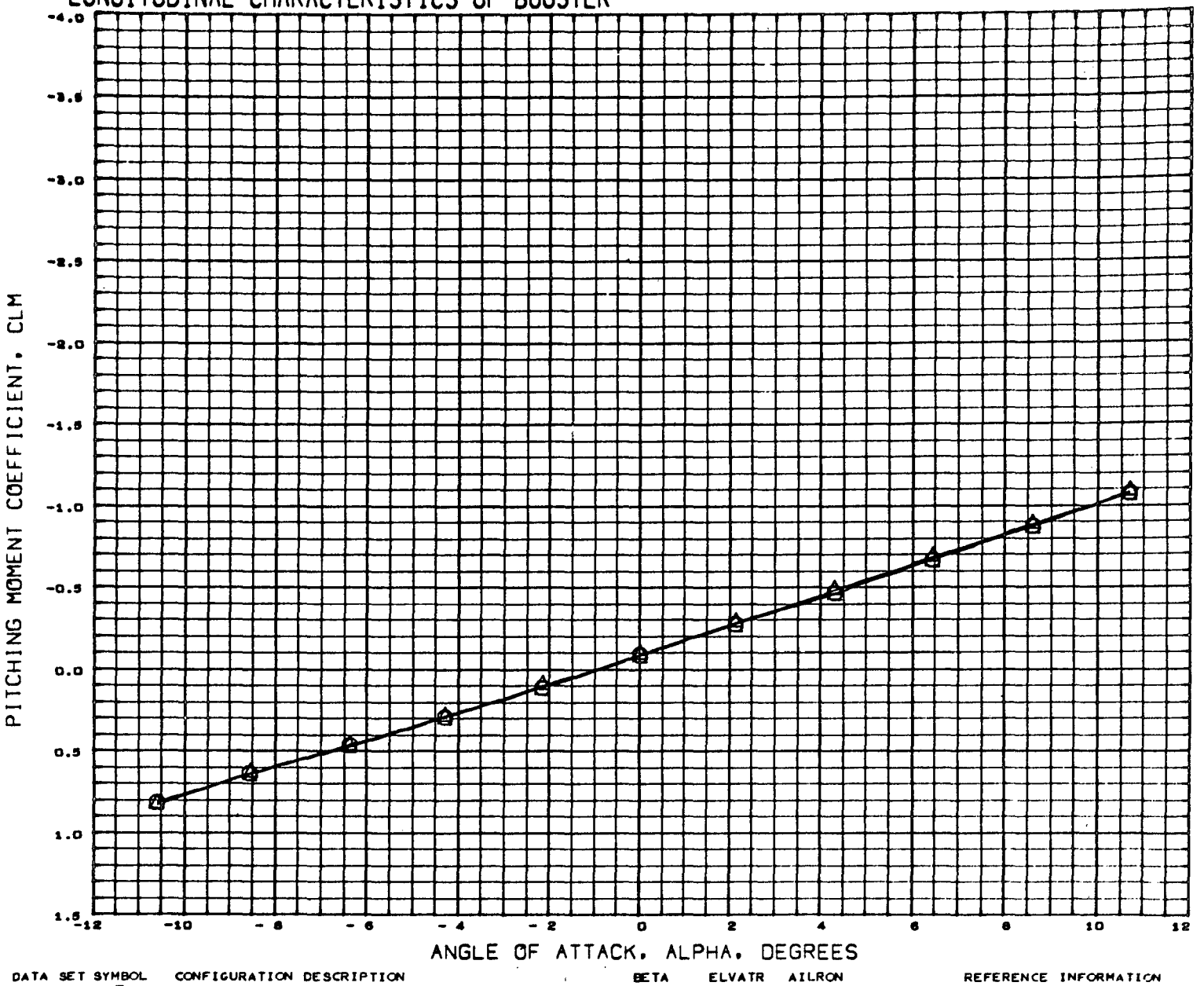


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

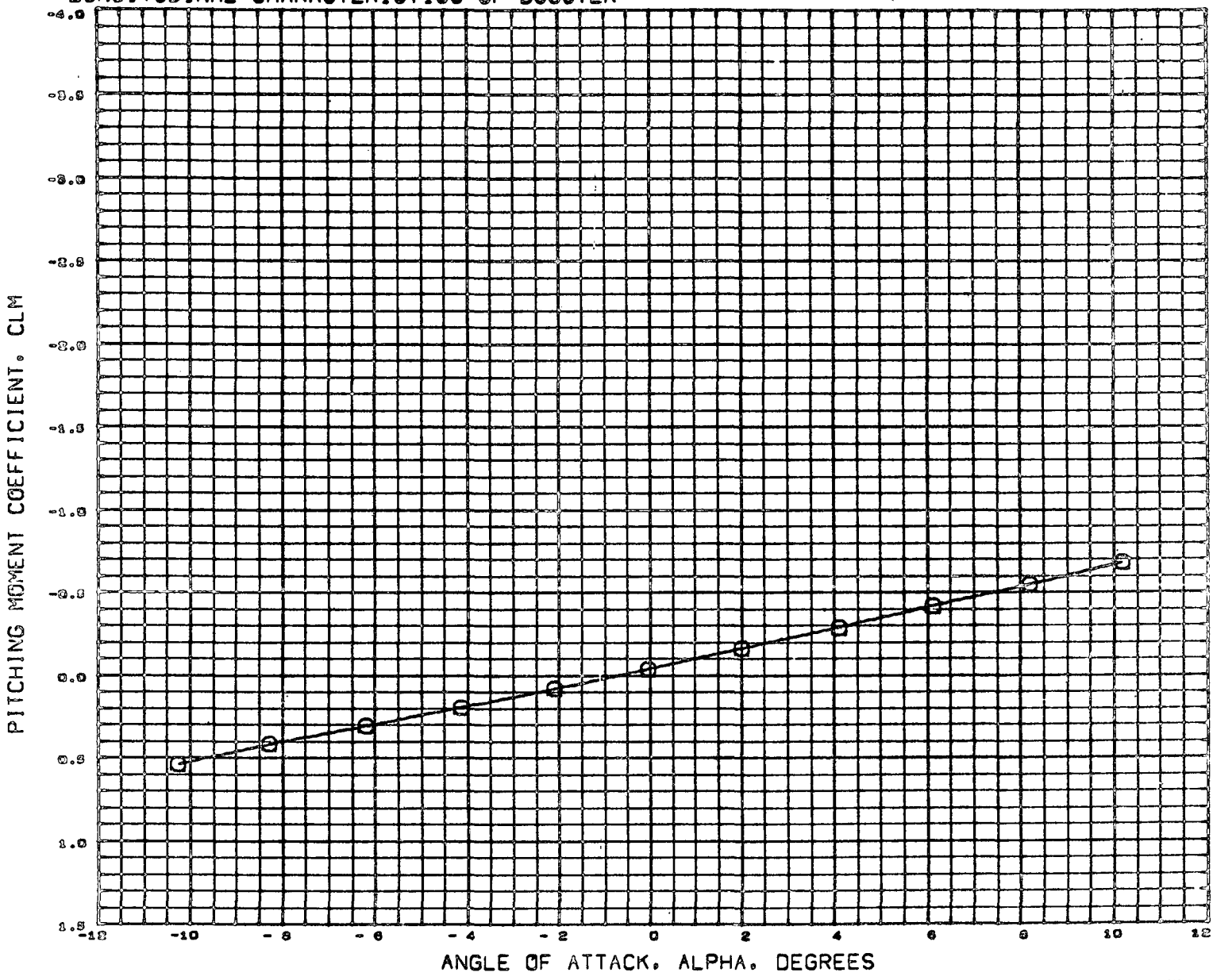


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

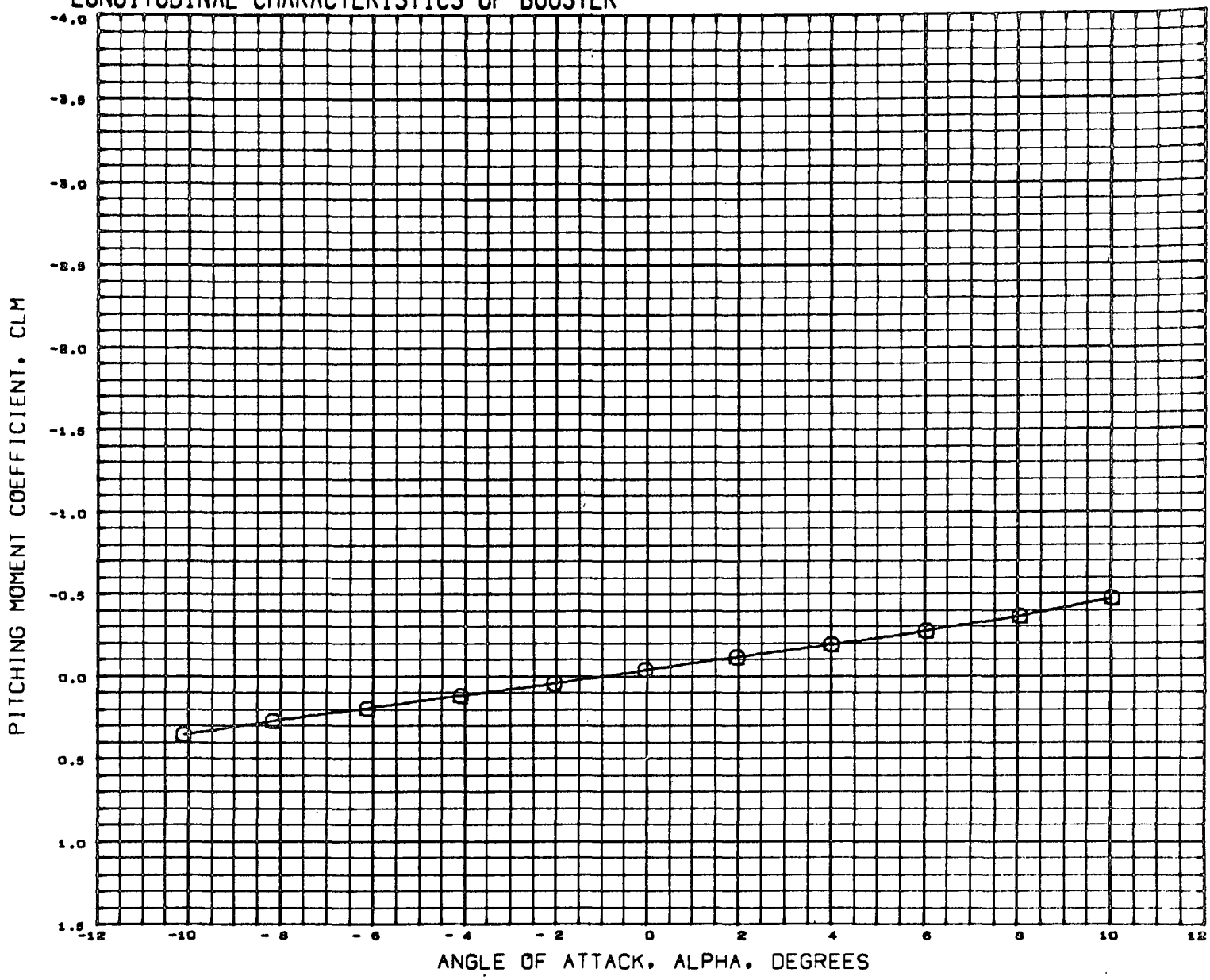


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)		MSFC490 CD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)		DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0005	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

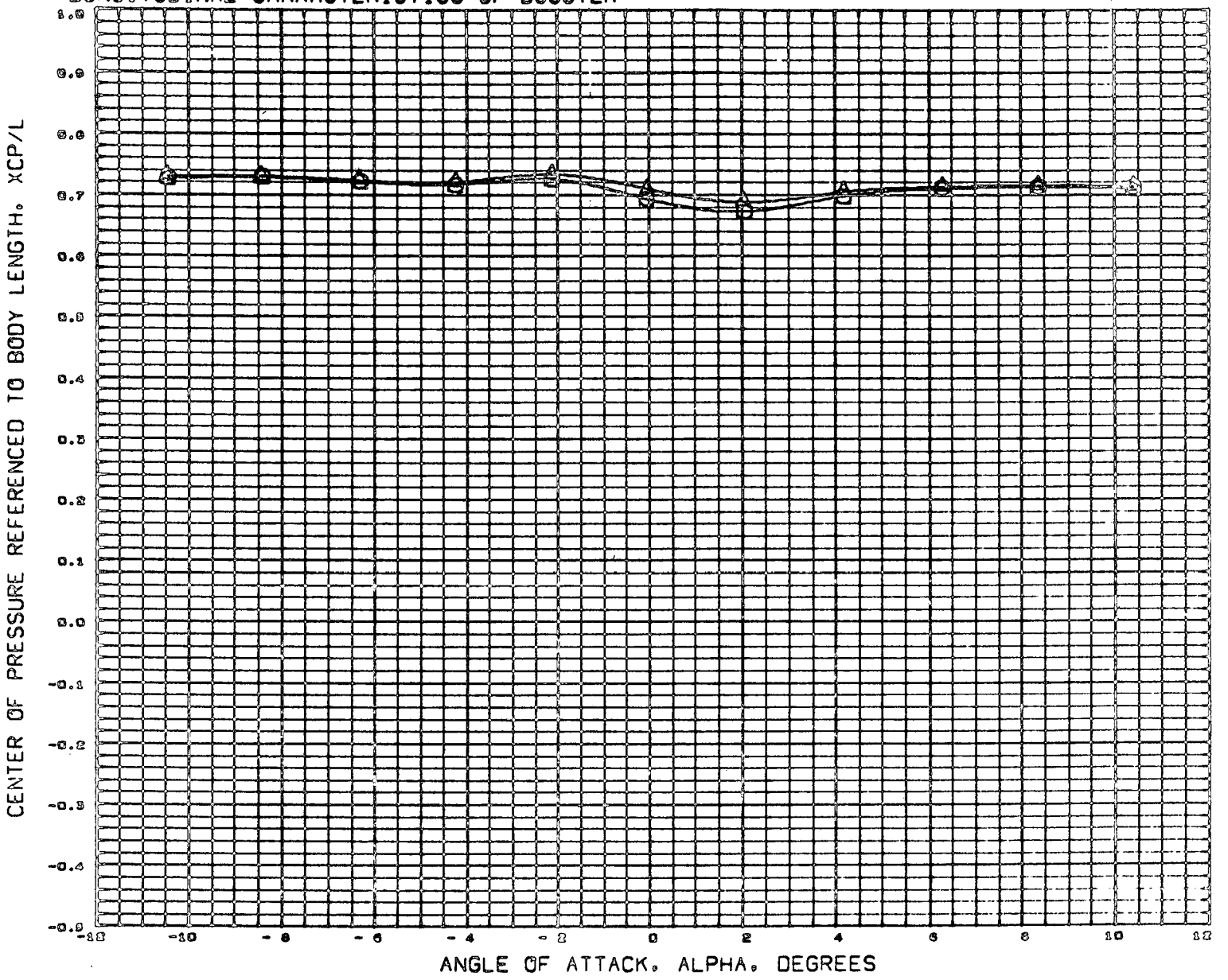


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3206A)		DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

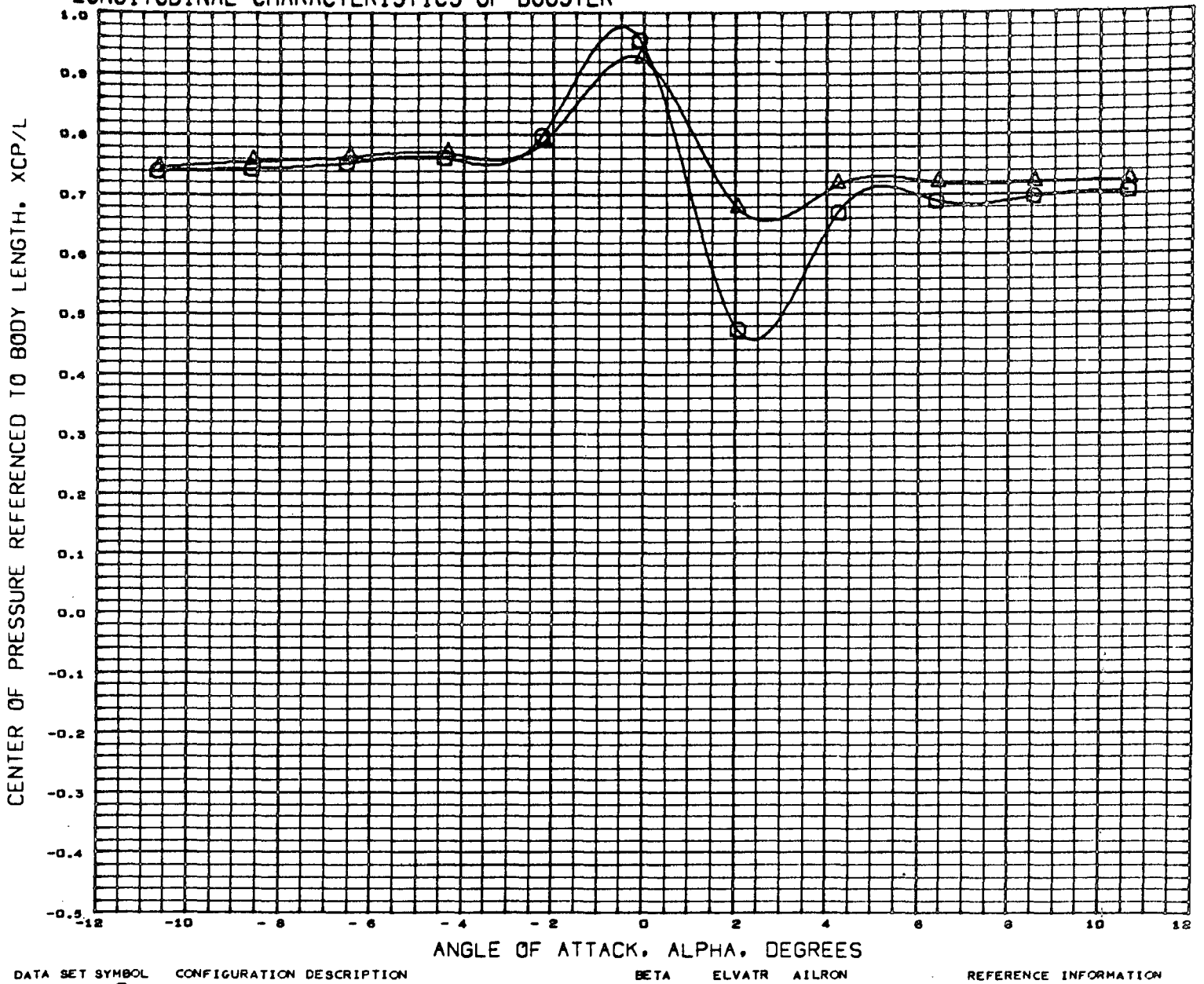


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(MD209A)		MSFC400 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(MD206A)		MSFC400 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.606

REFERENCE INFORMATION		
SREF	19.6500	SQ IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

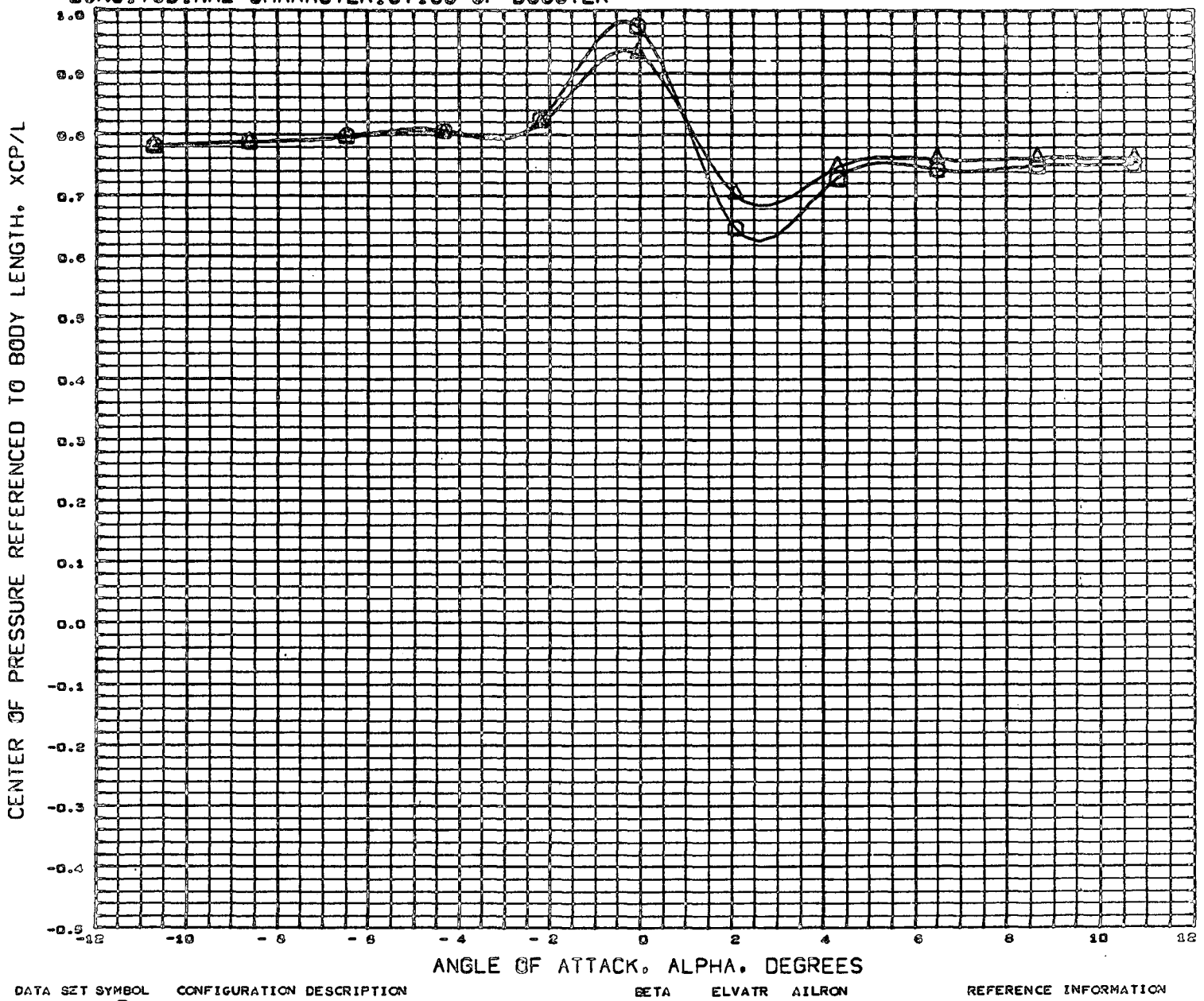


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

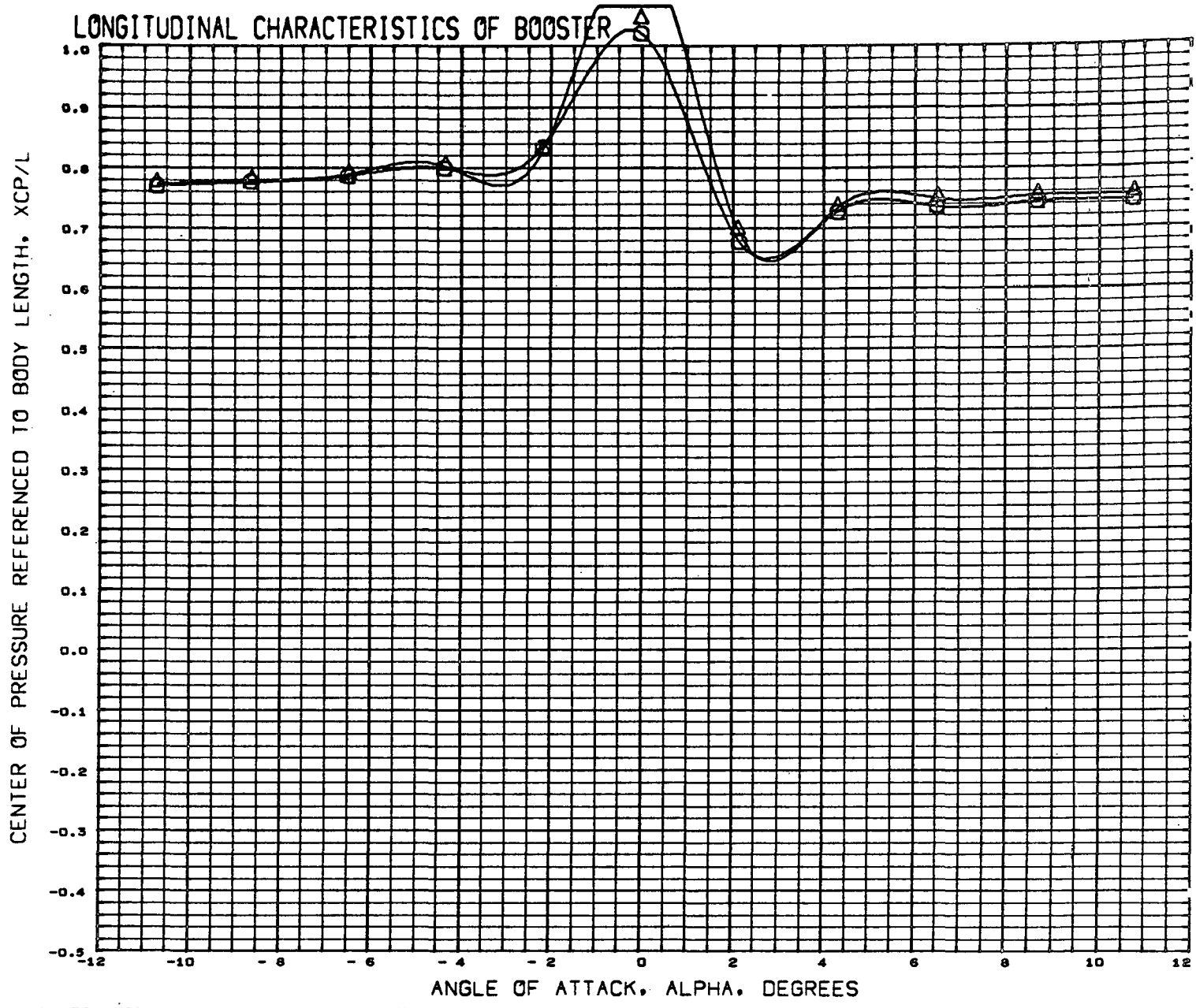


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

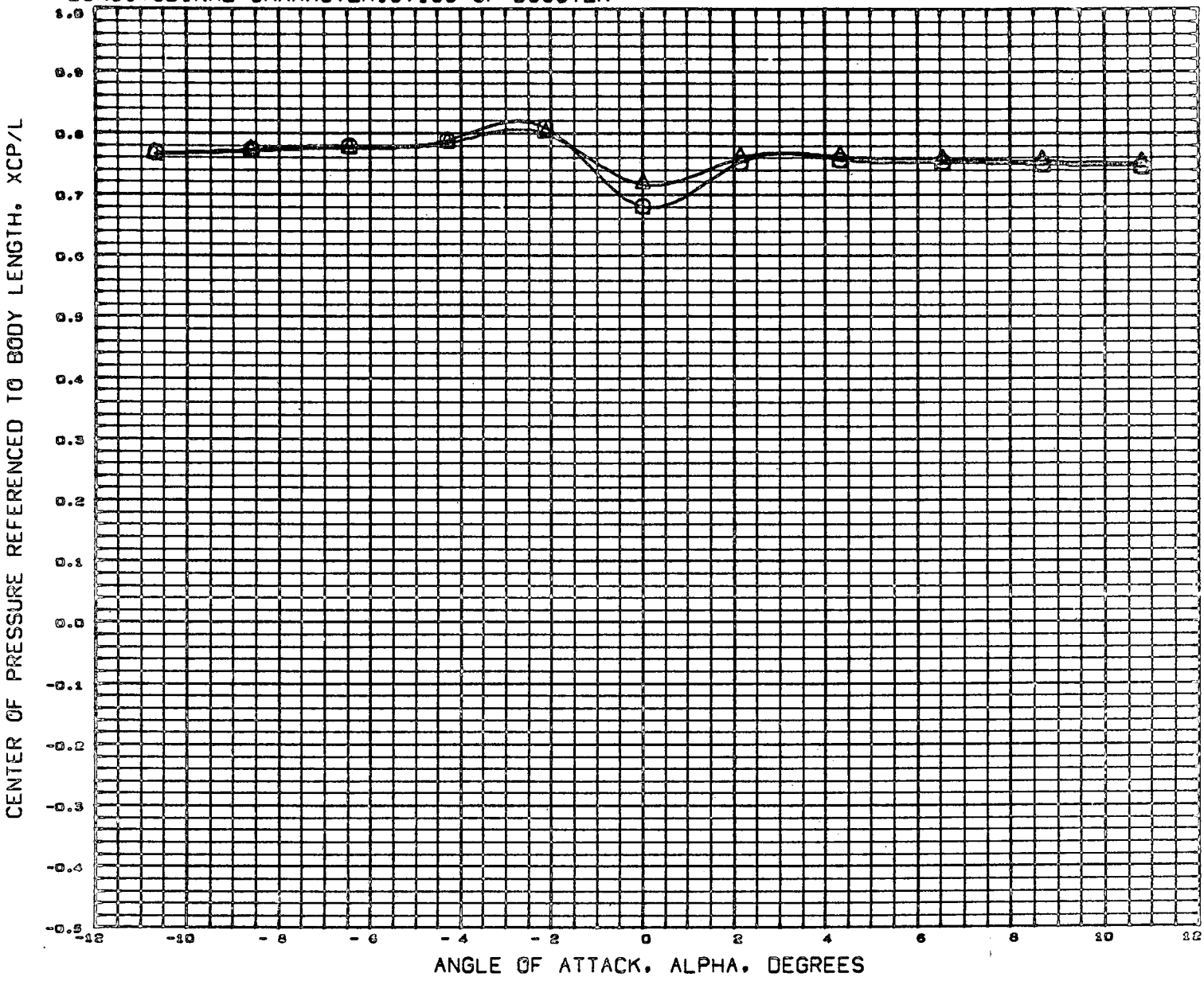


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

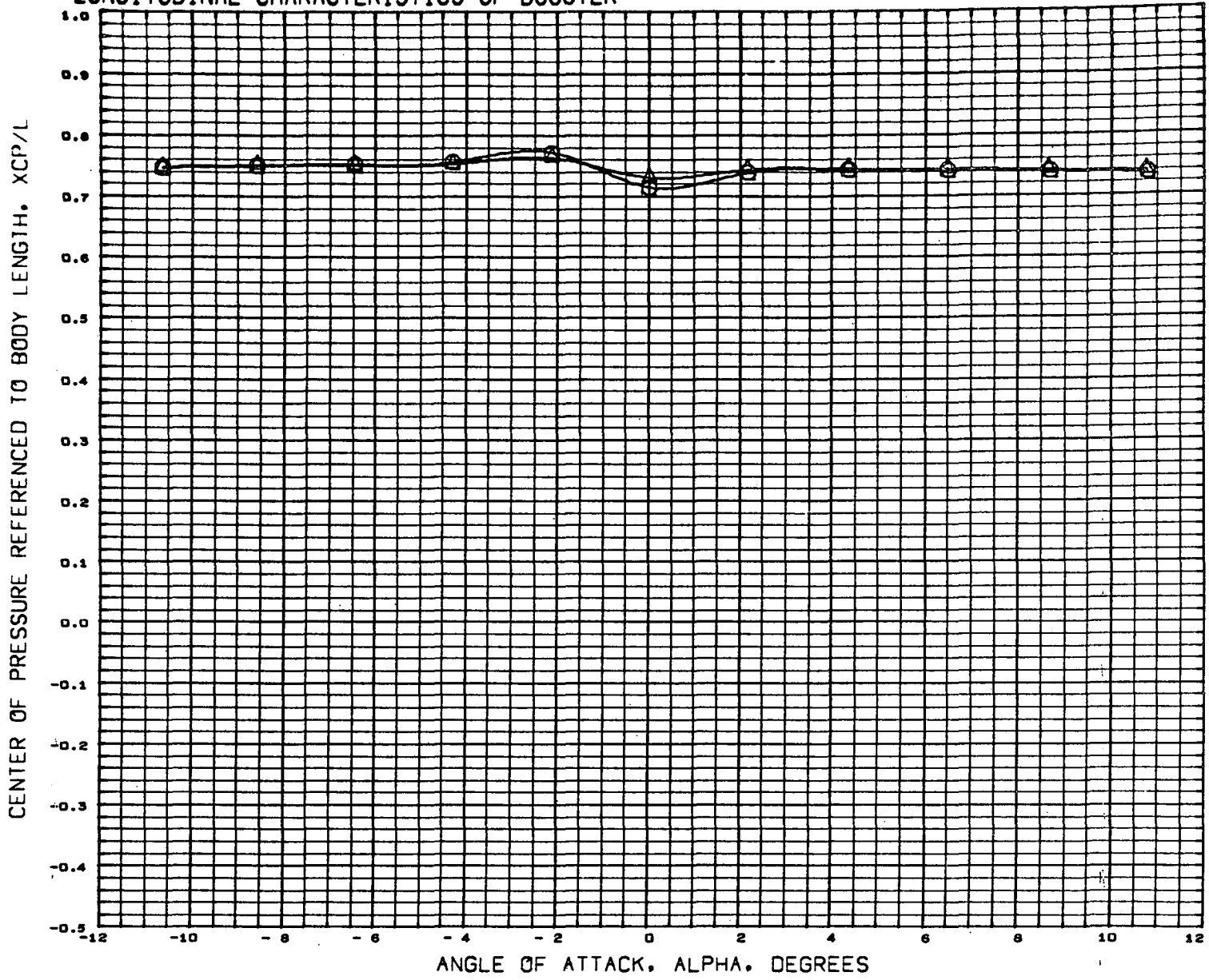


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

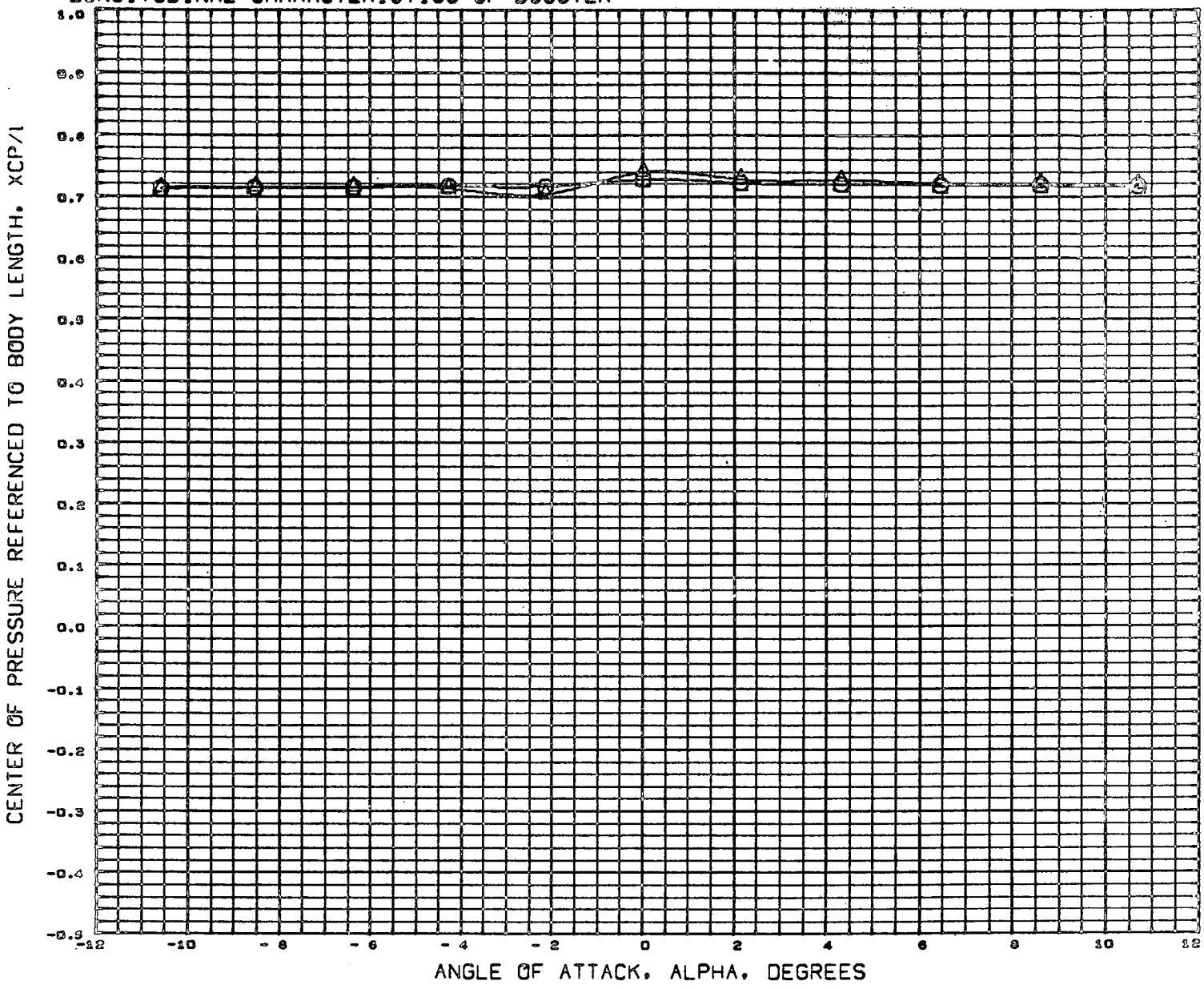


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

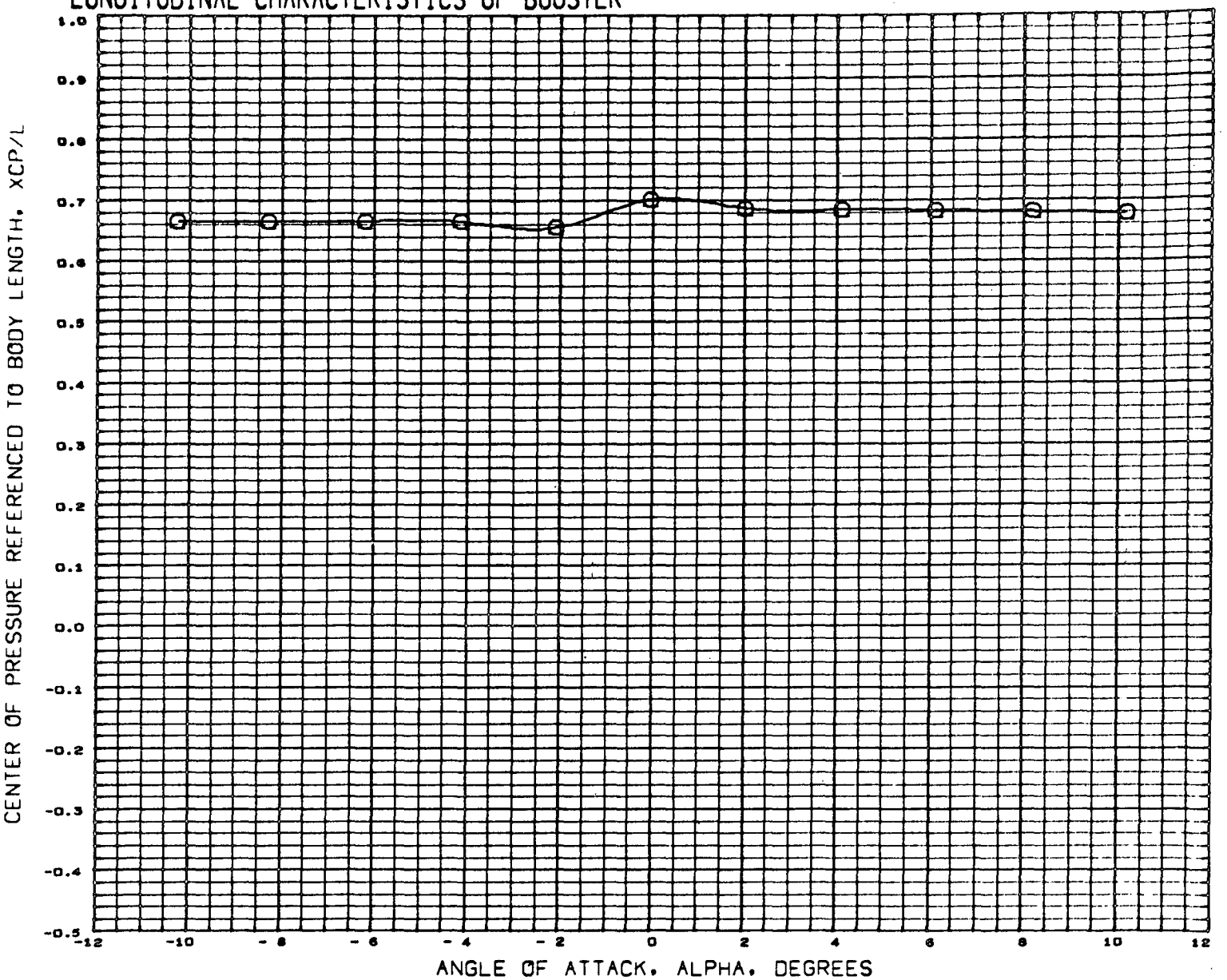


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

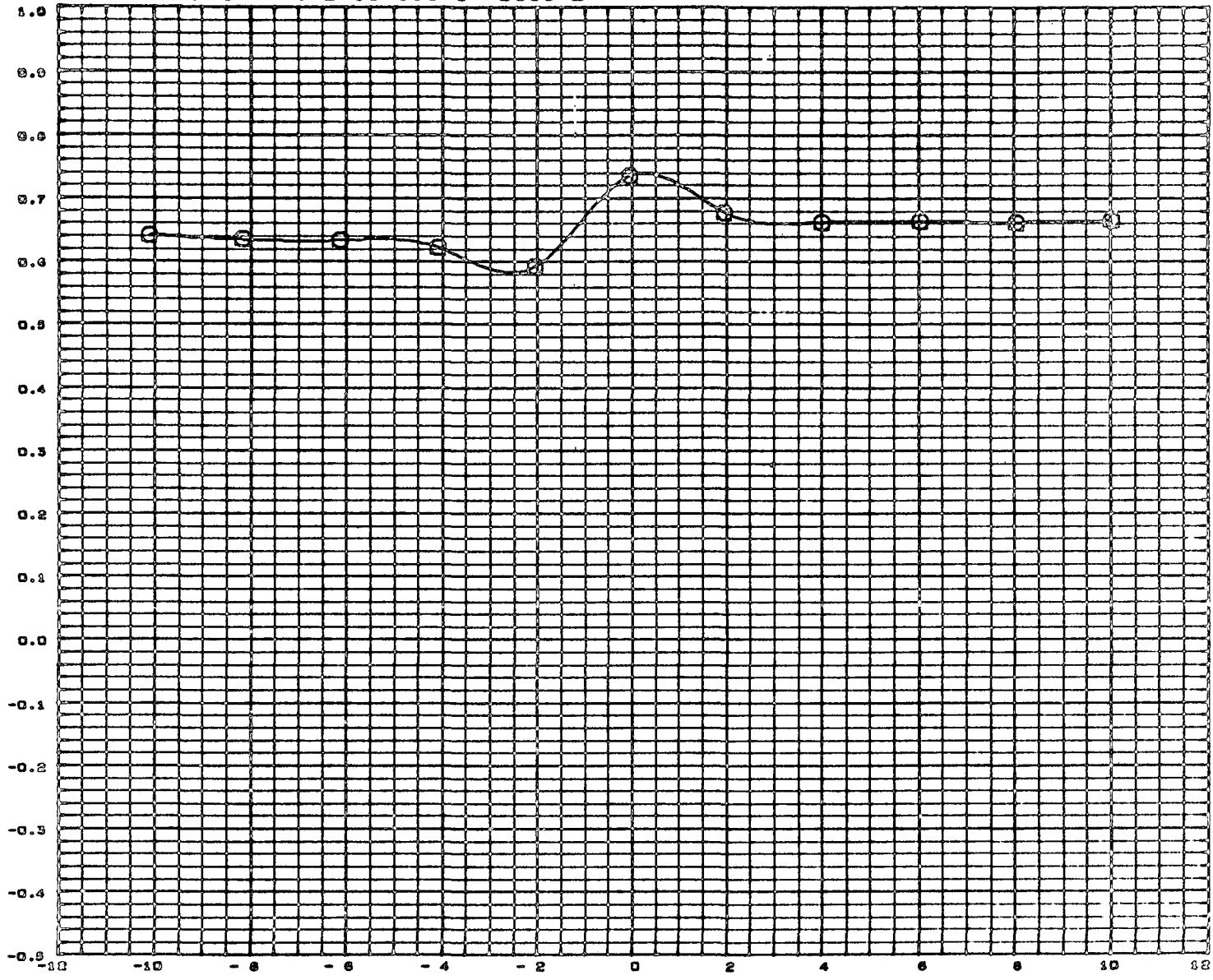


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B2UC4BW14V8	0.000	0.000	0.000
(H3206A)		DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



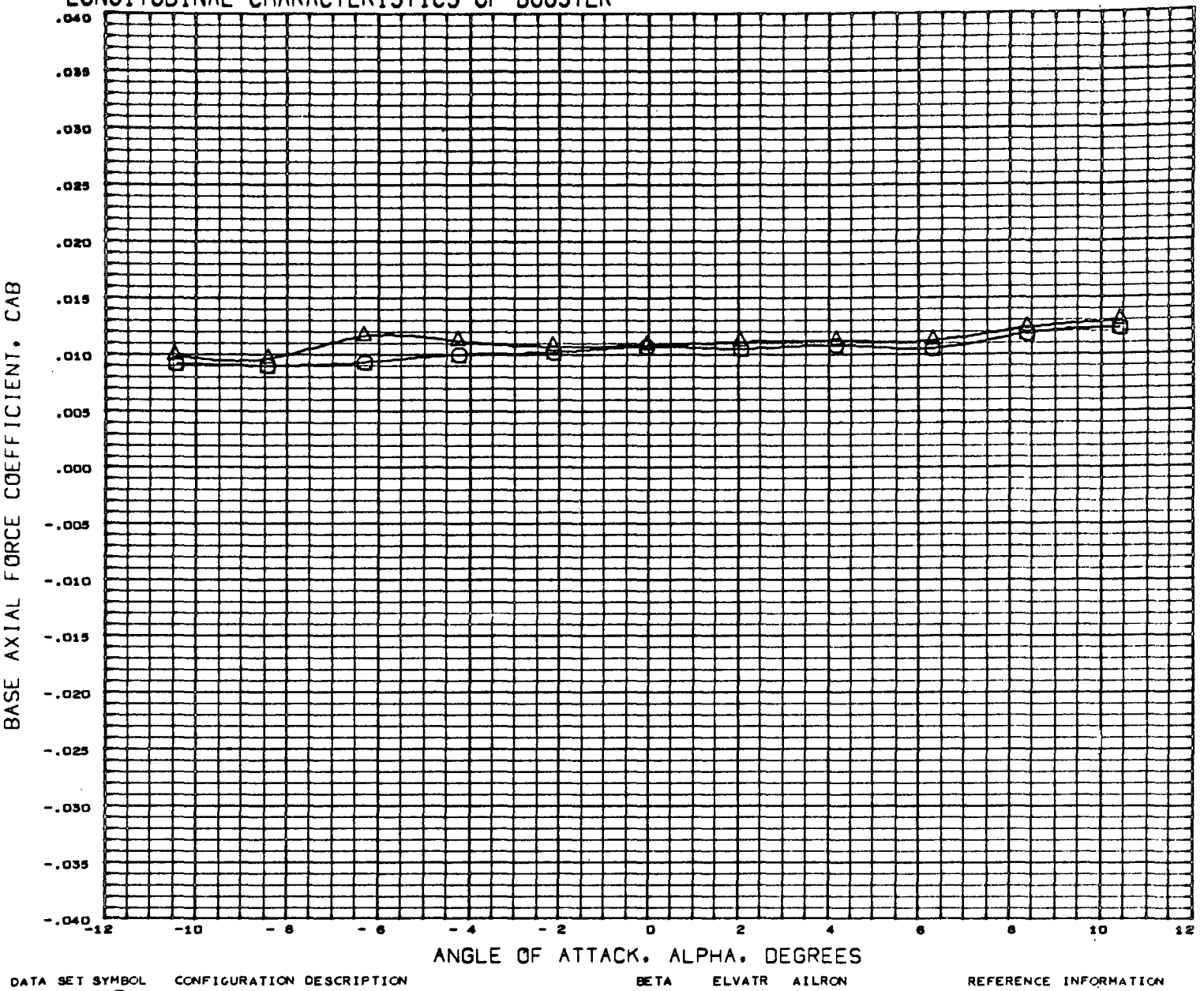
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 4.959

REFERENCE INFORMATION

SREF	15.6360	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

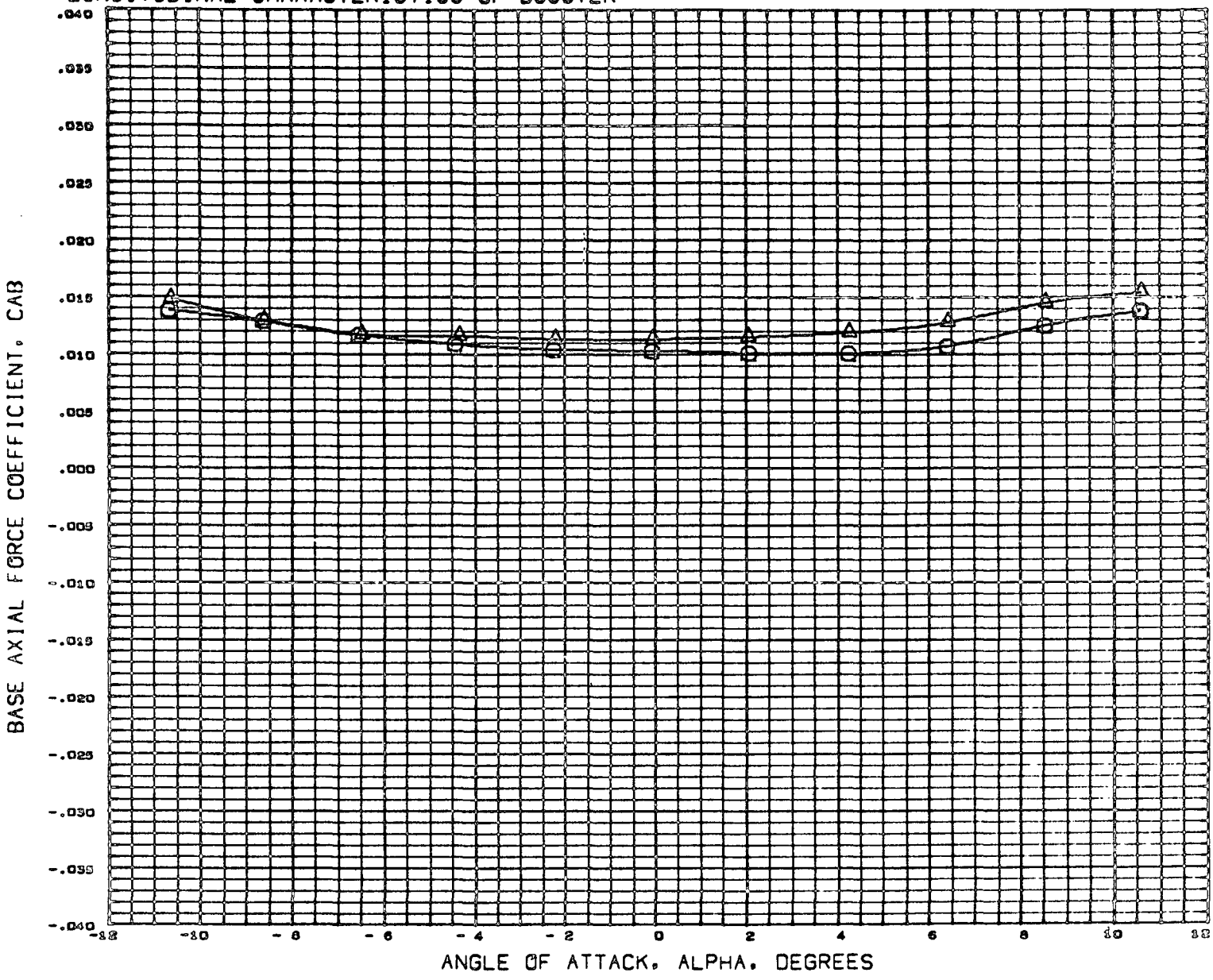


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



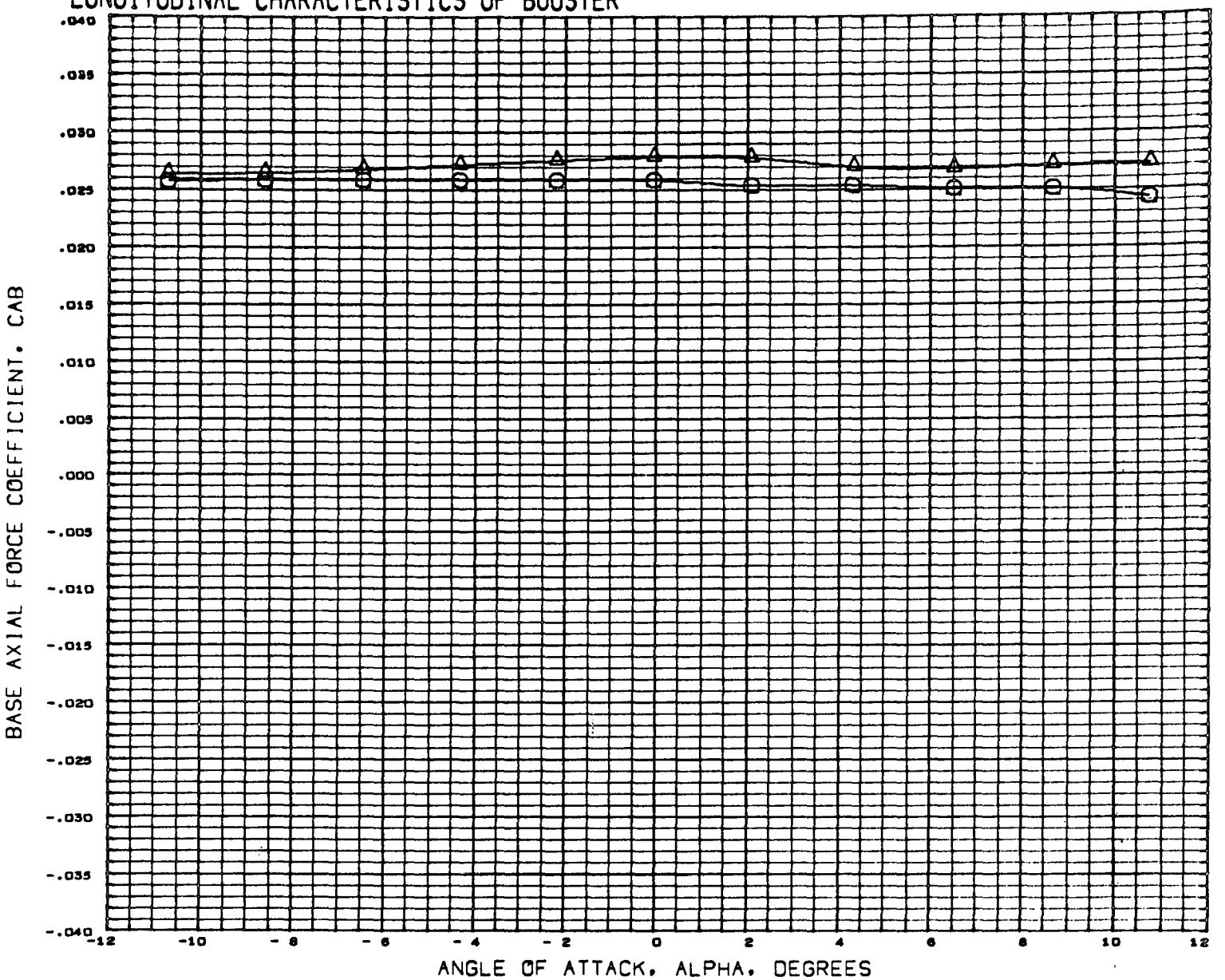
DATA SET SYMBOL		CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 0.900

LONGITUDINAL CHARACTERISTICS OF BOOSTER



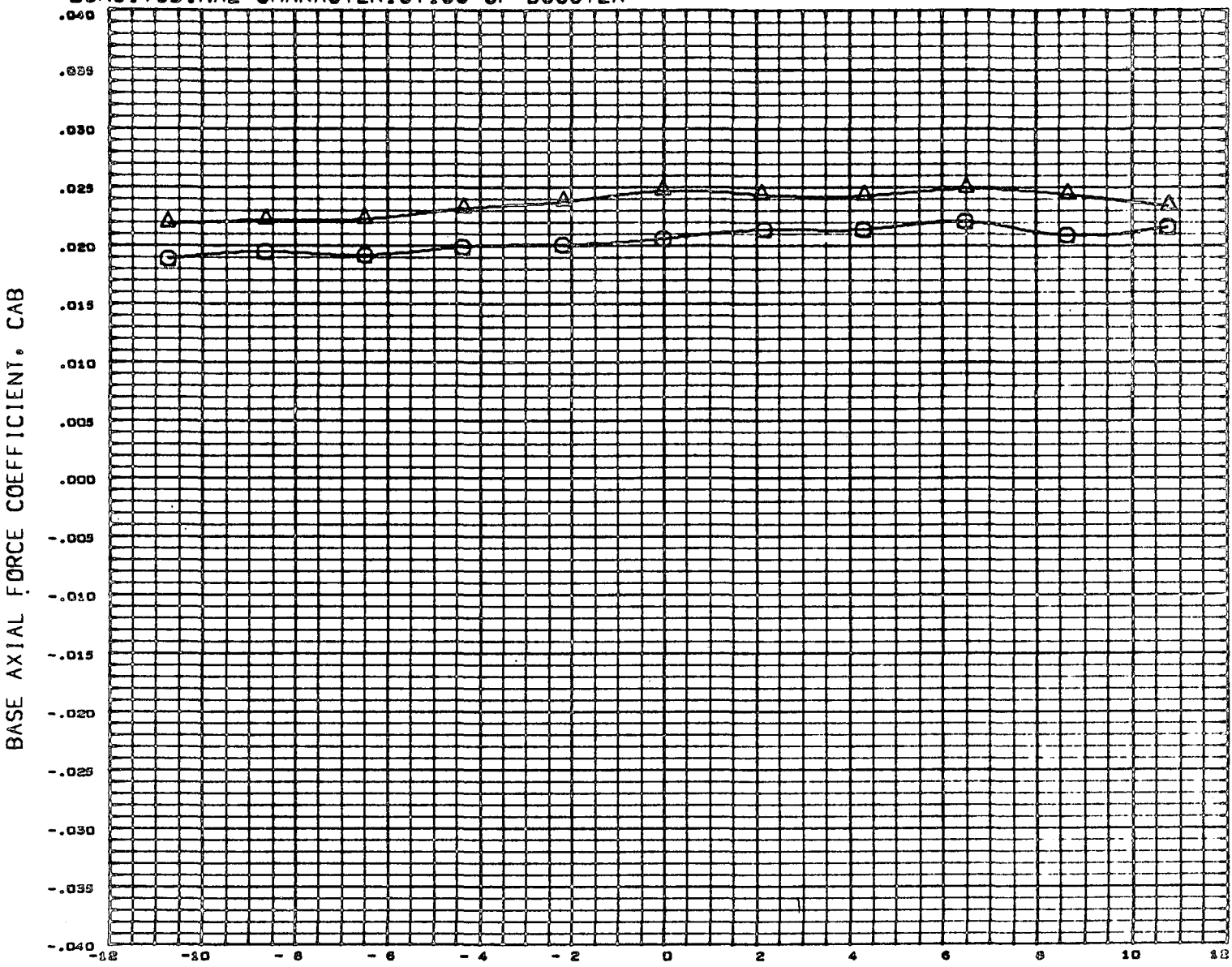
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.998

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

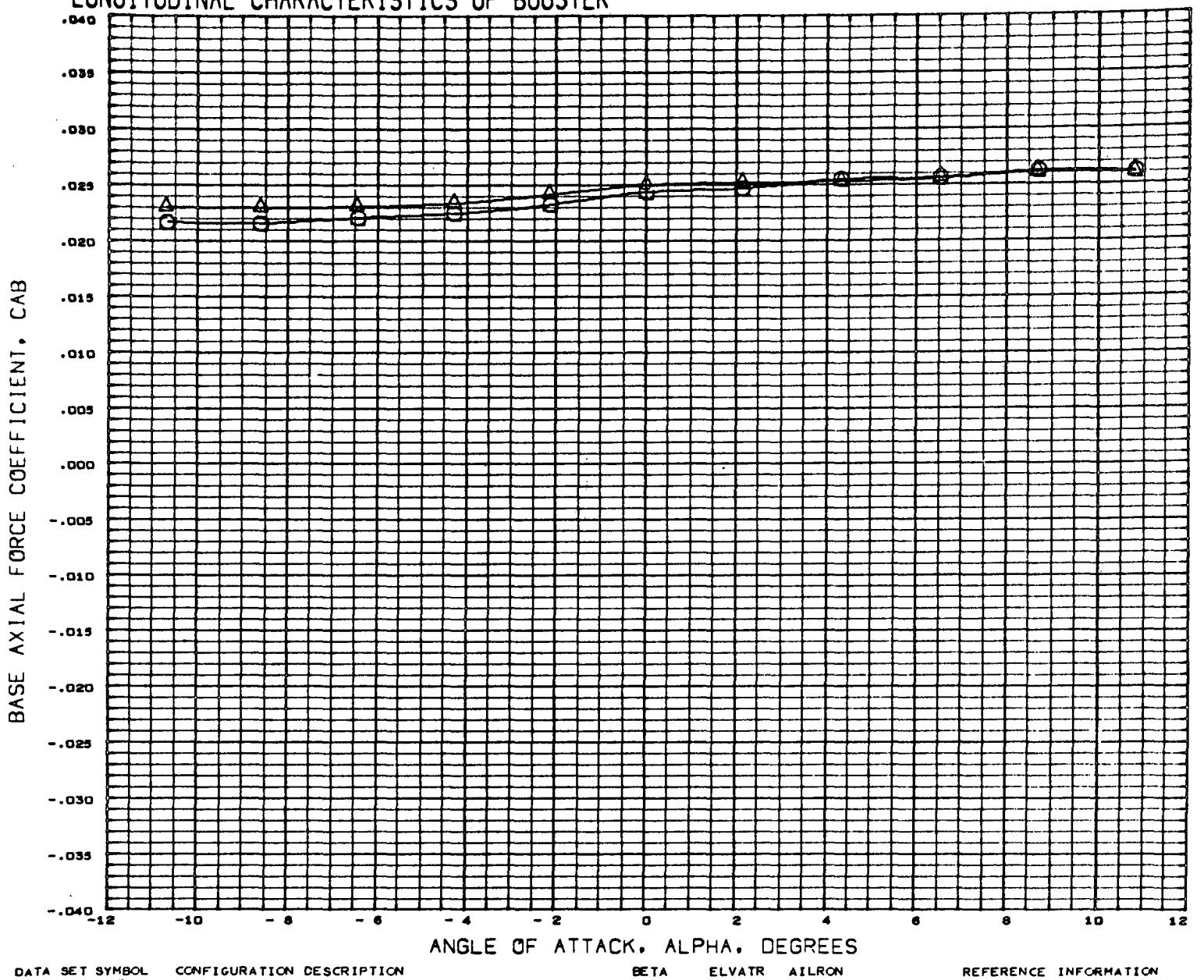


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

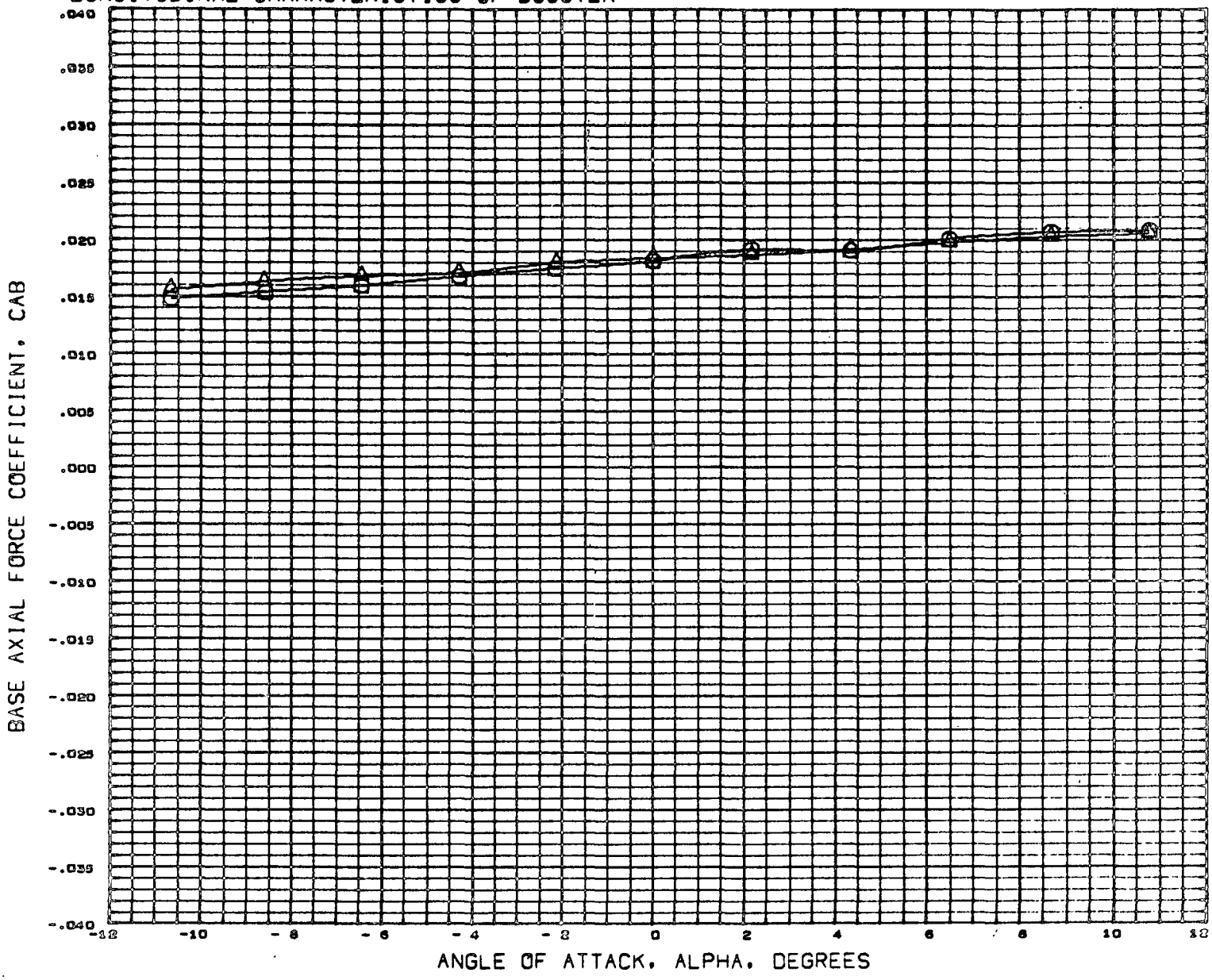


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

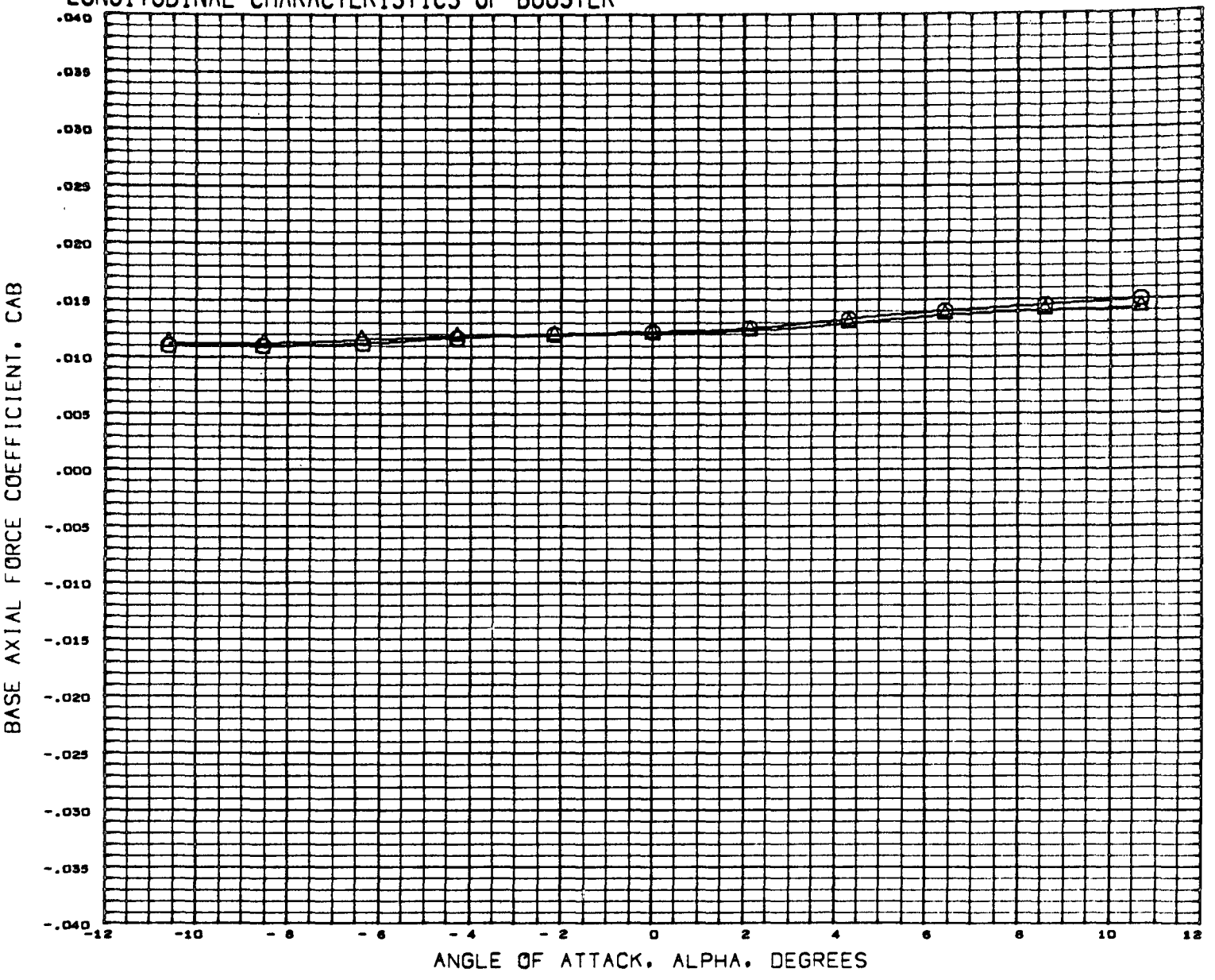


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

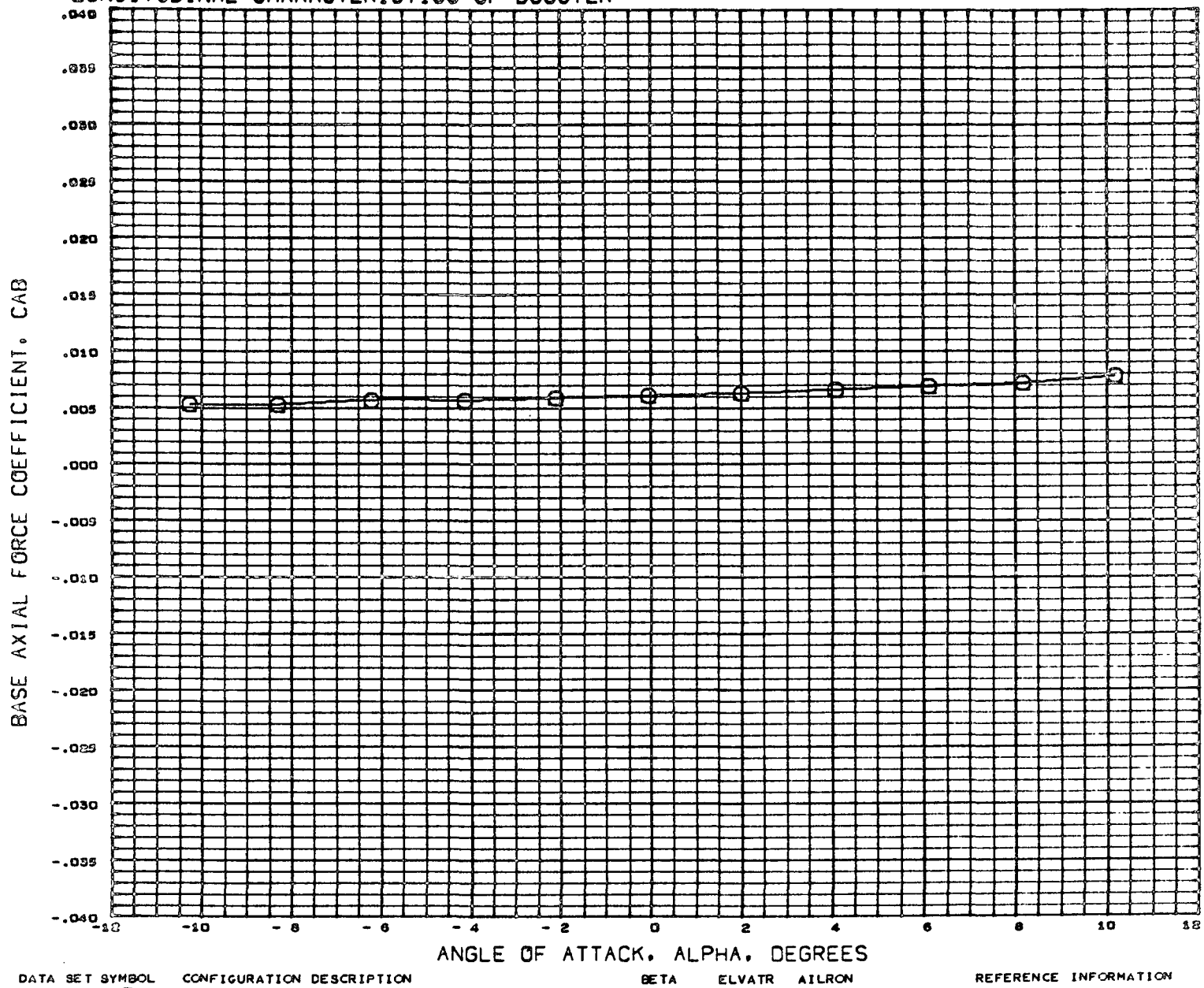


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

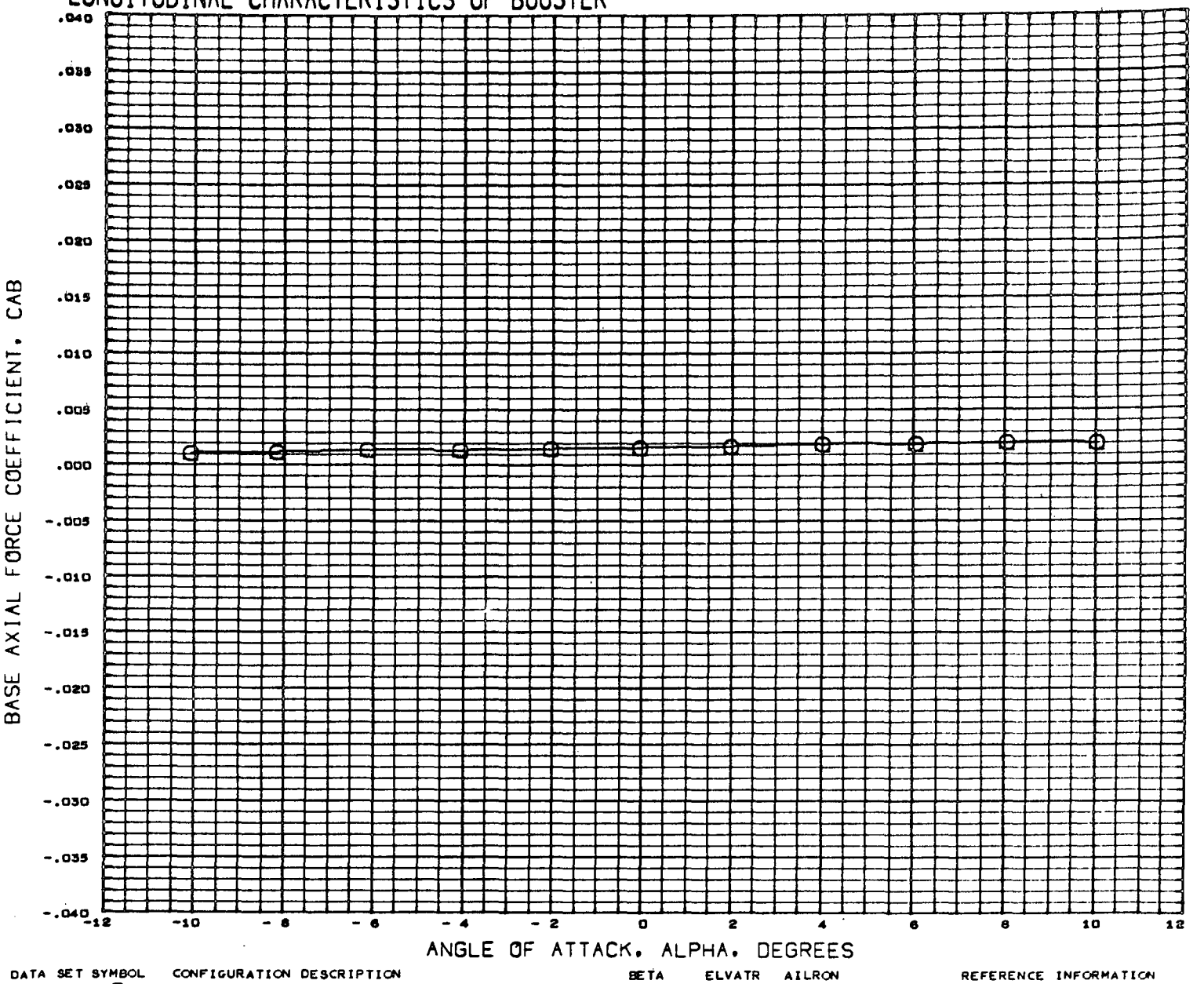


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

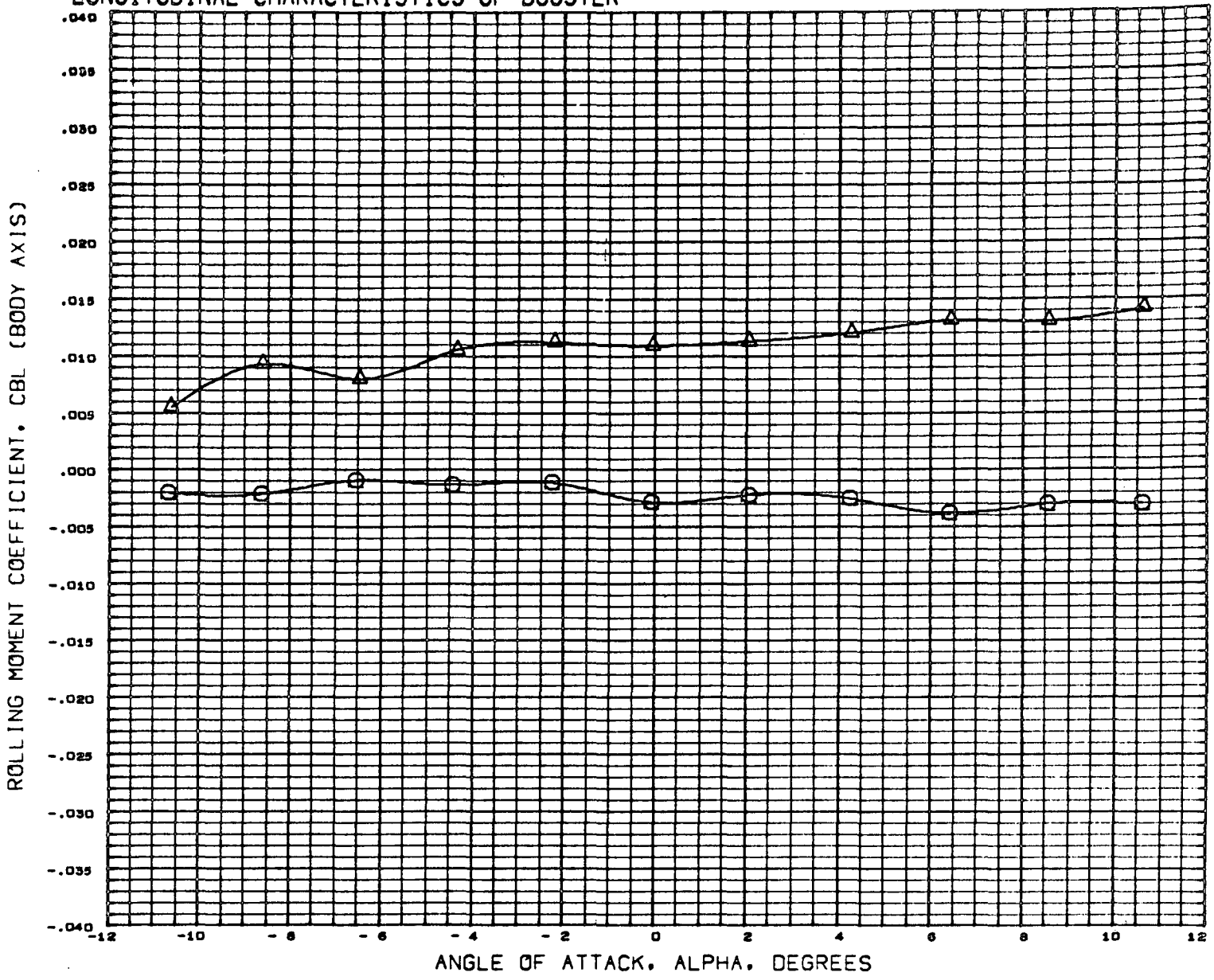
LONGITUDINAL CHARACTERISTICS OF BOOSTER

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3208A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	10.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

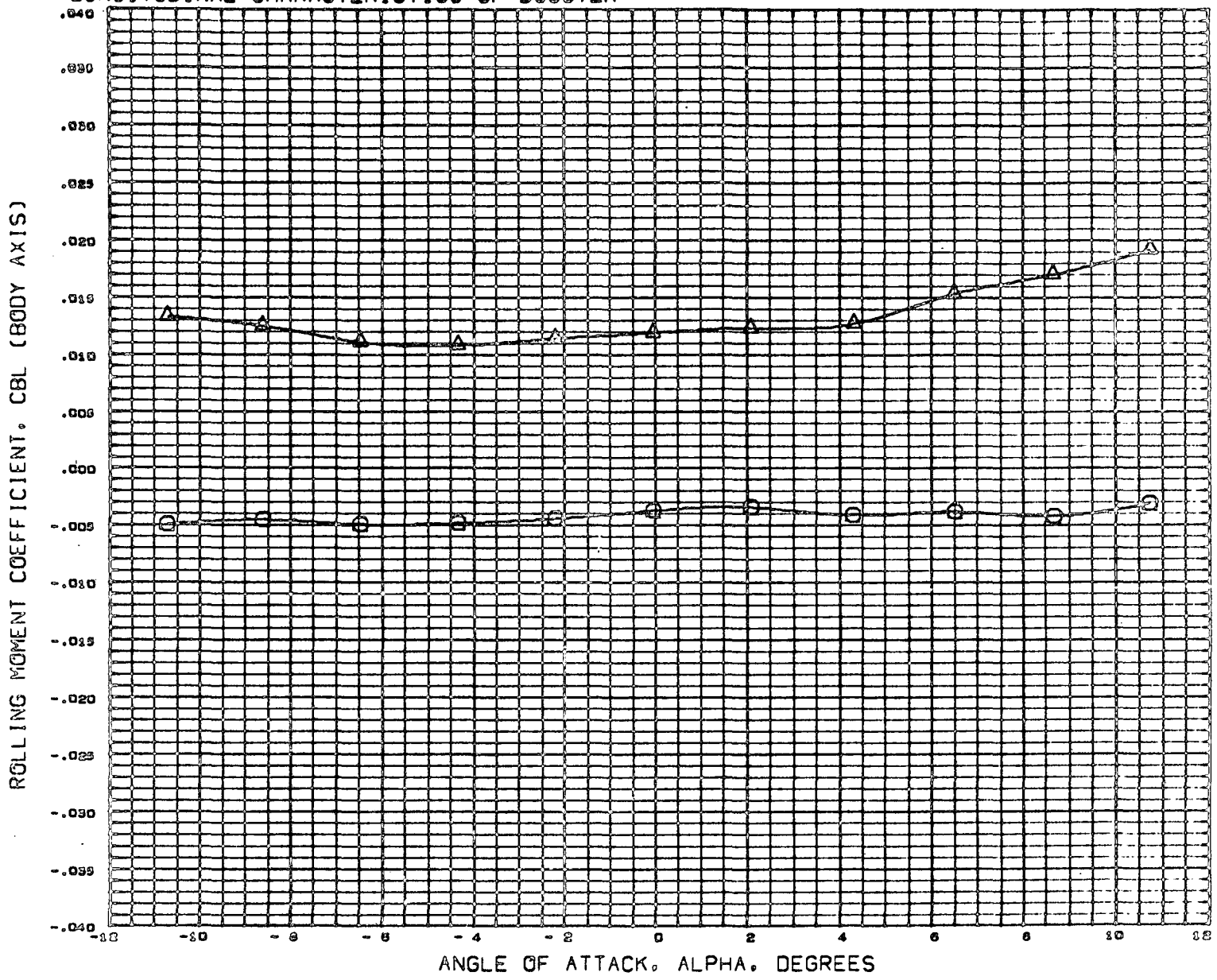


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

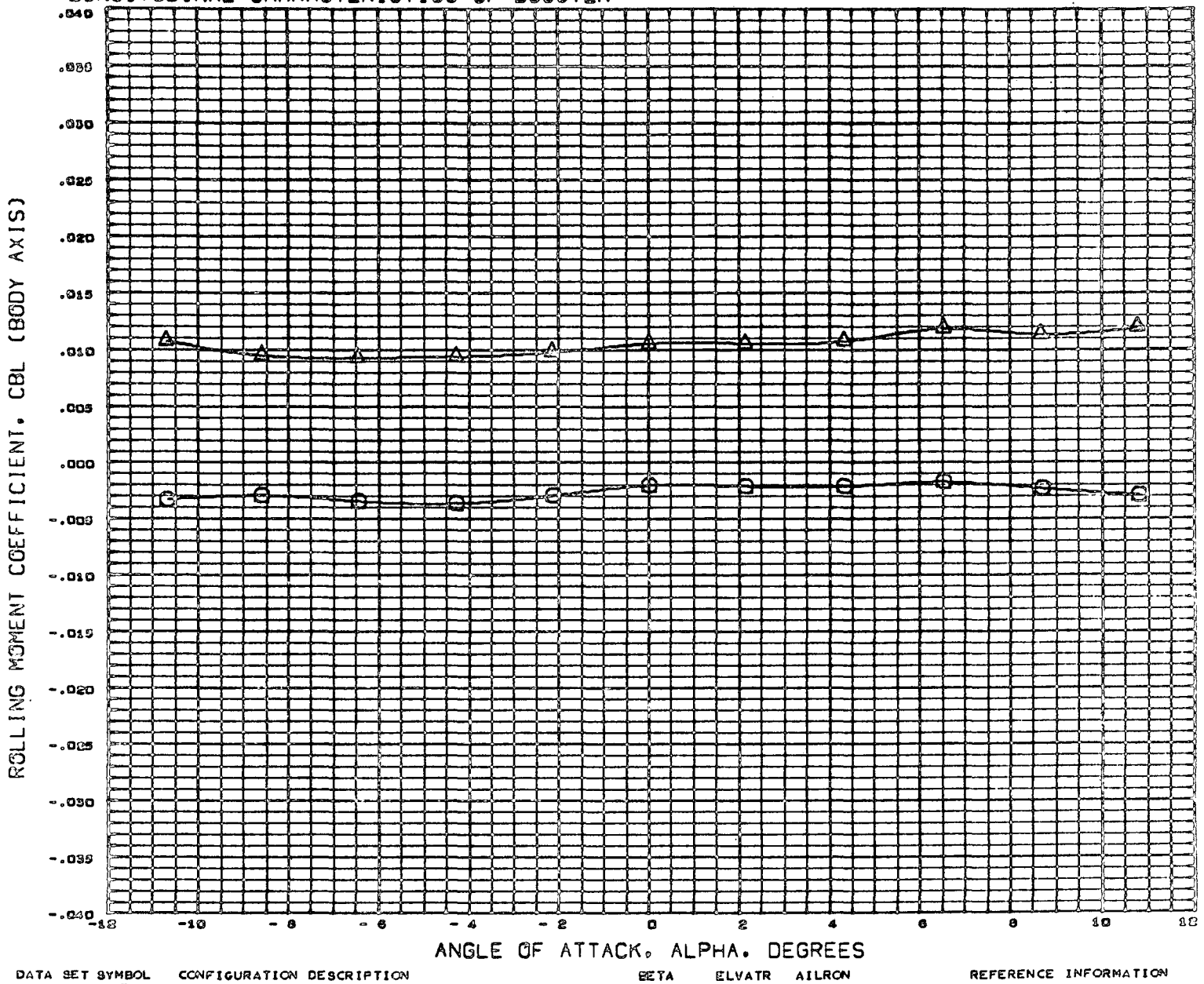
LONGITUDINAL CHARACTERISTICS OF BOOSTER

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(MS209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(MS206A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.197

REFERENCE INFORMATION

SREF	19.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

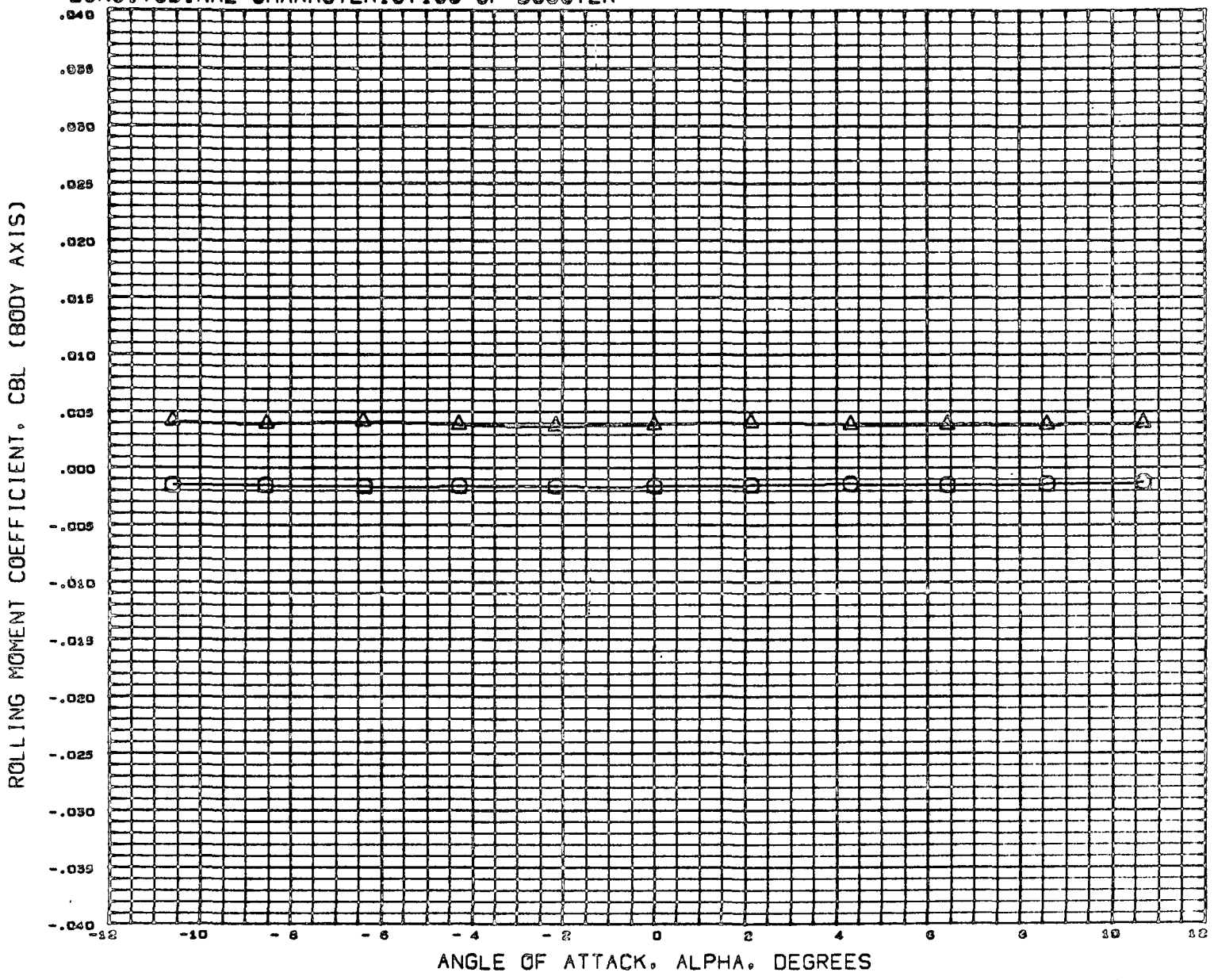
LONGITUDINAL CHARACTERISTICS OF BOOSTER

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



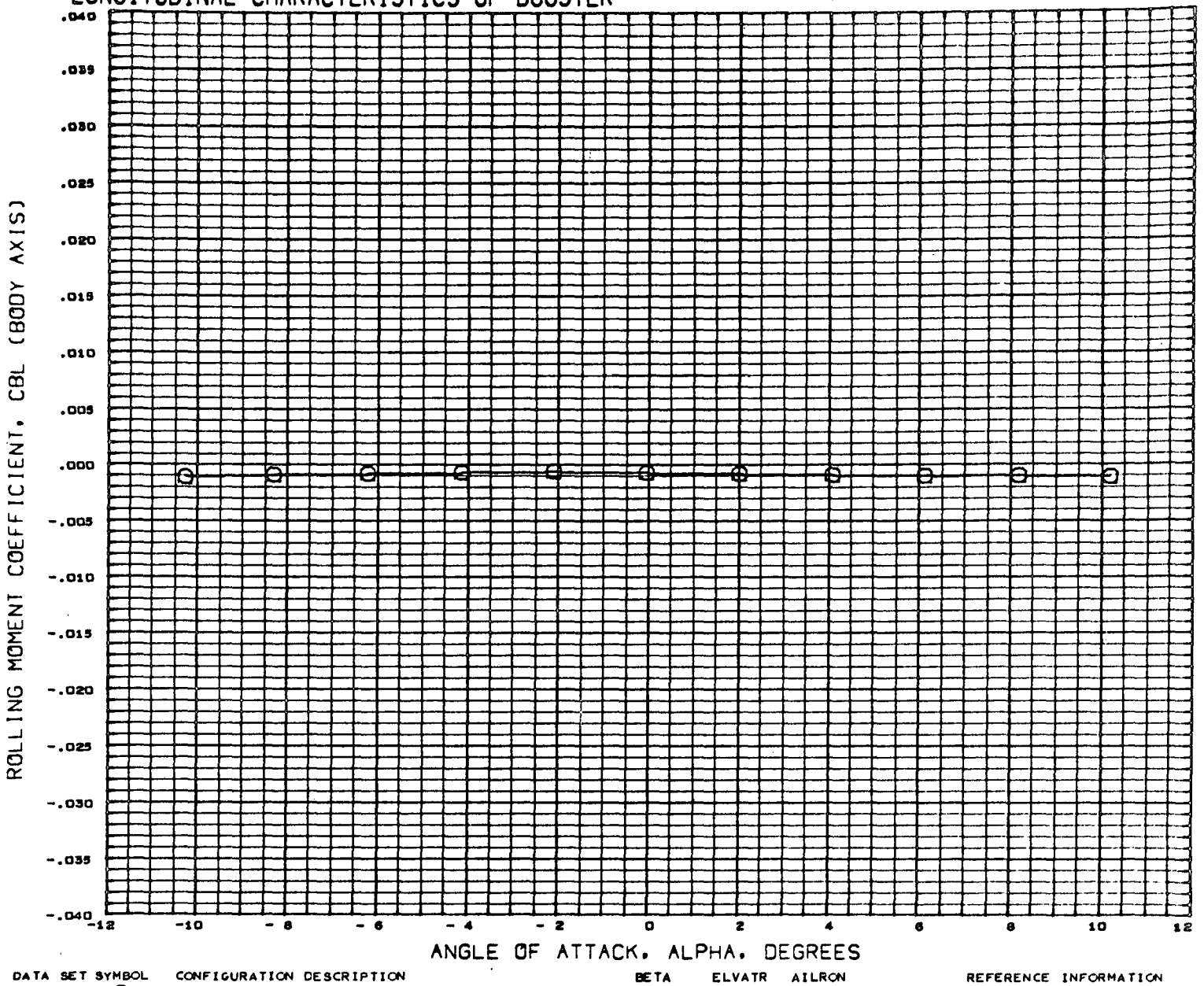
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M320SA)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M320GA)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	10.000

MACH 1.959

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0980	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



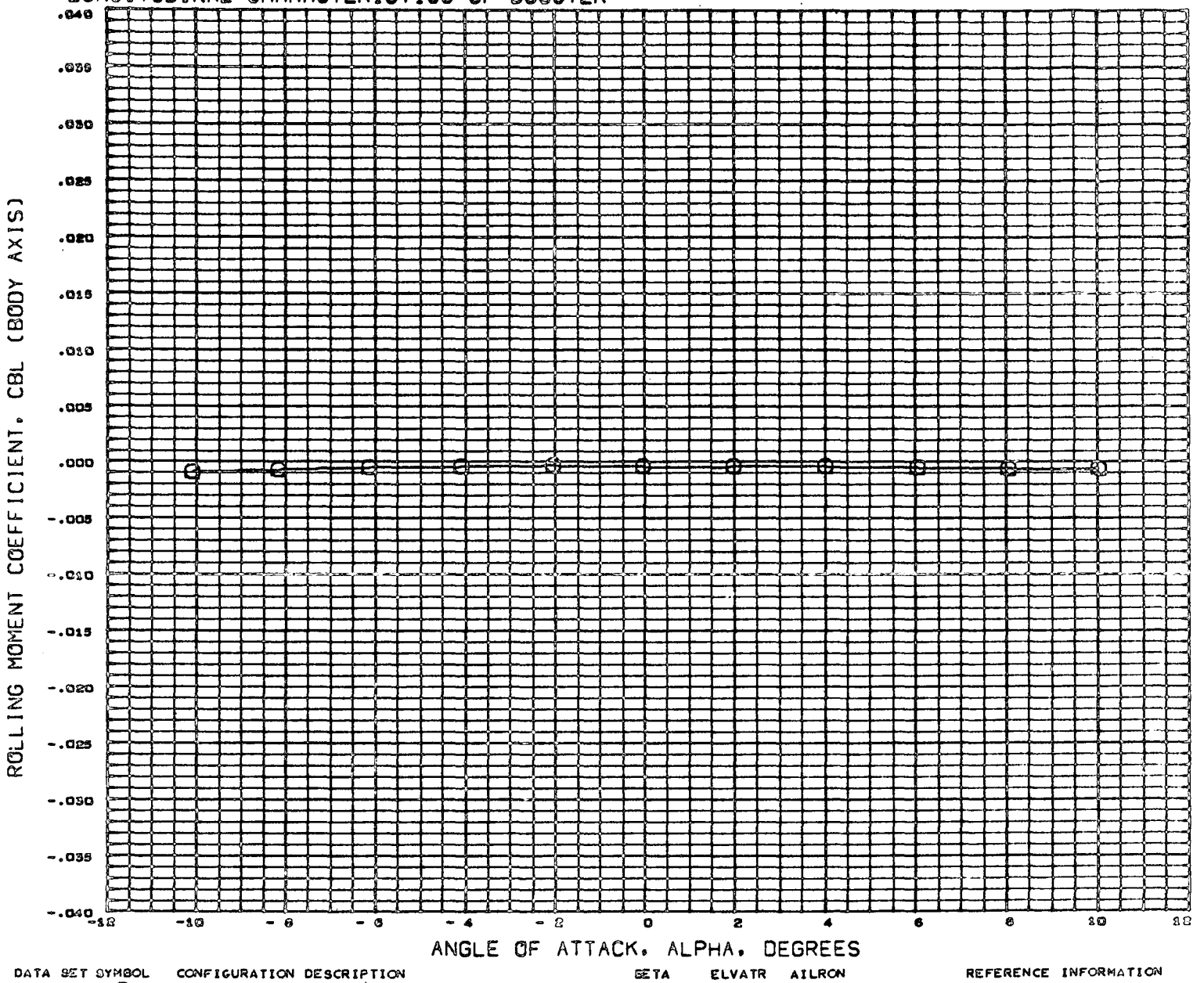
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3206A)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 2.990

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

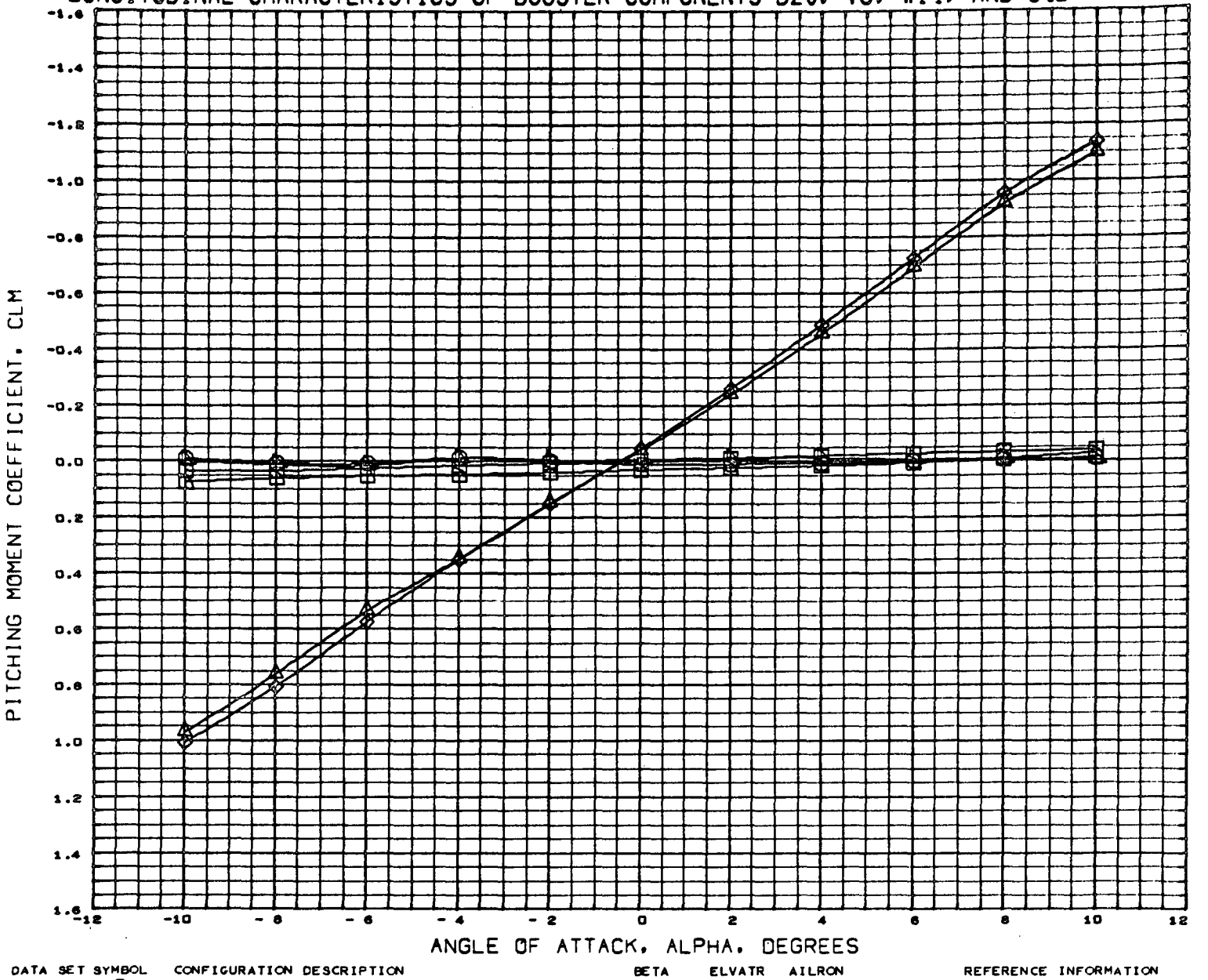


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3209A)	○	MSFC490 GD DELTA BOOSTER B2UC4BW14V8	0.000	0.000	0.000
(H3206A)	△	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	0.000	10.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

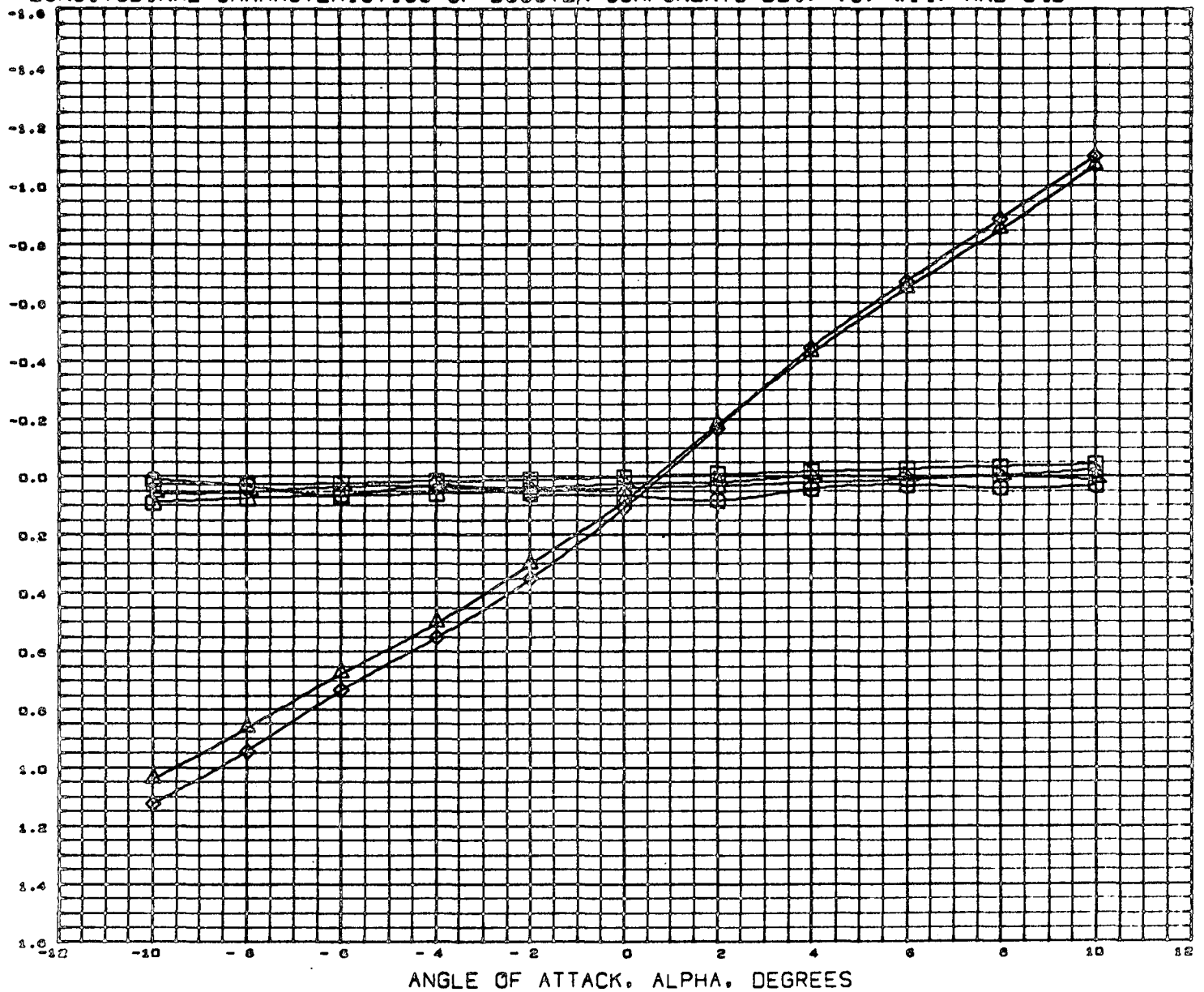


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)		A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)		A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)		A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)		A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)		A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

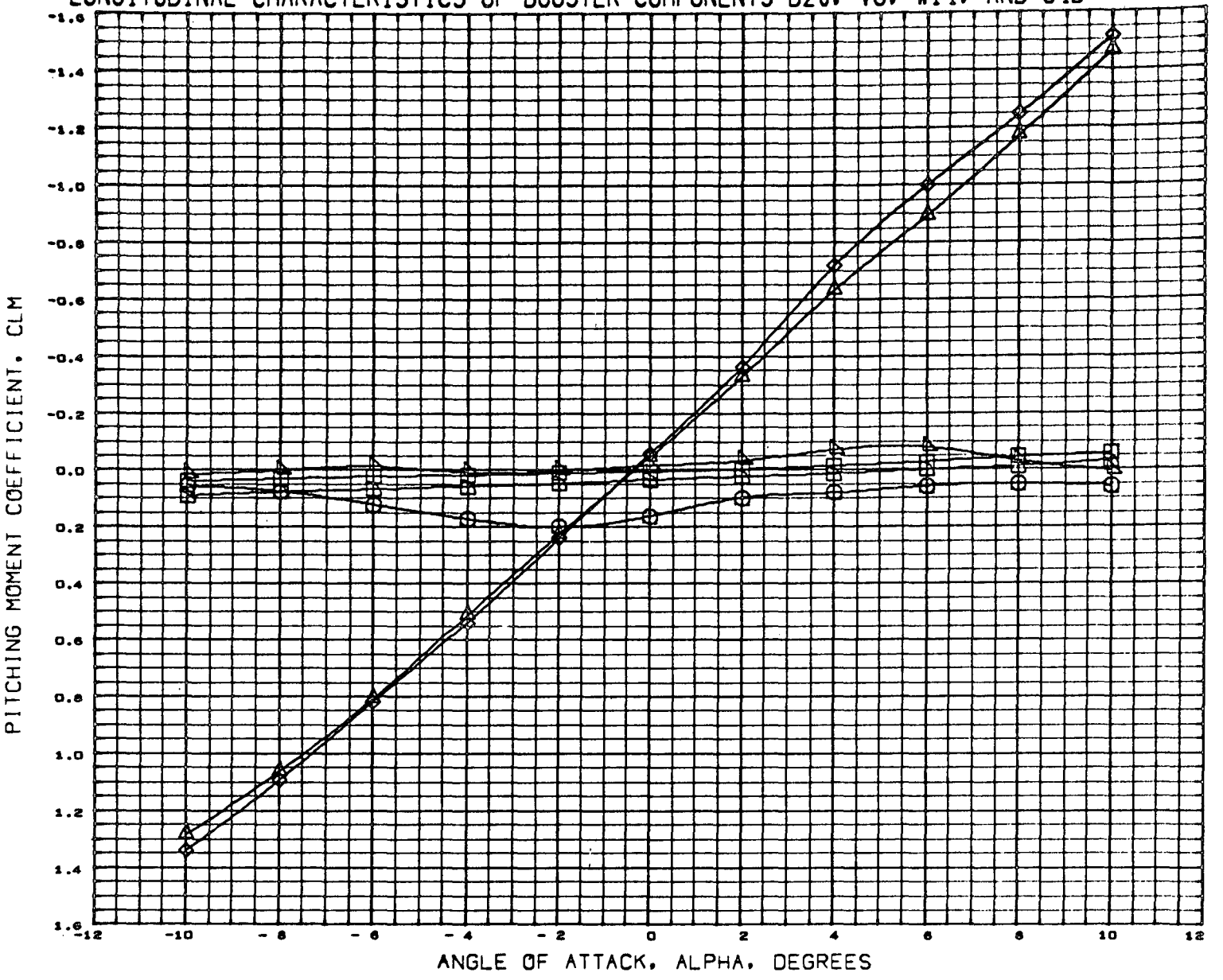


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)	□	A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)	◇	A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)	△	A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)	▷	A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)	◁	A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

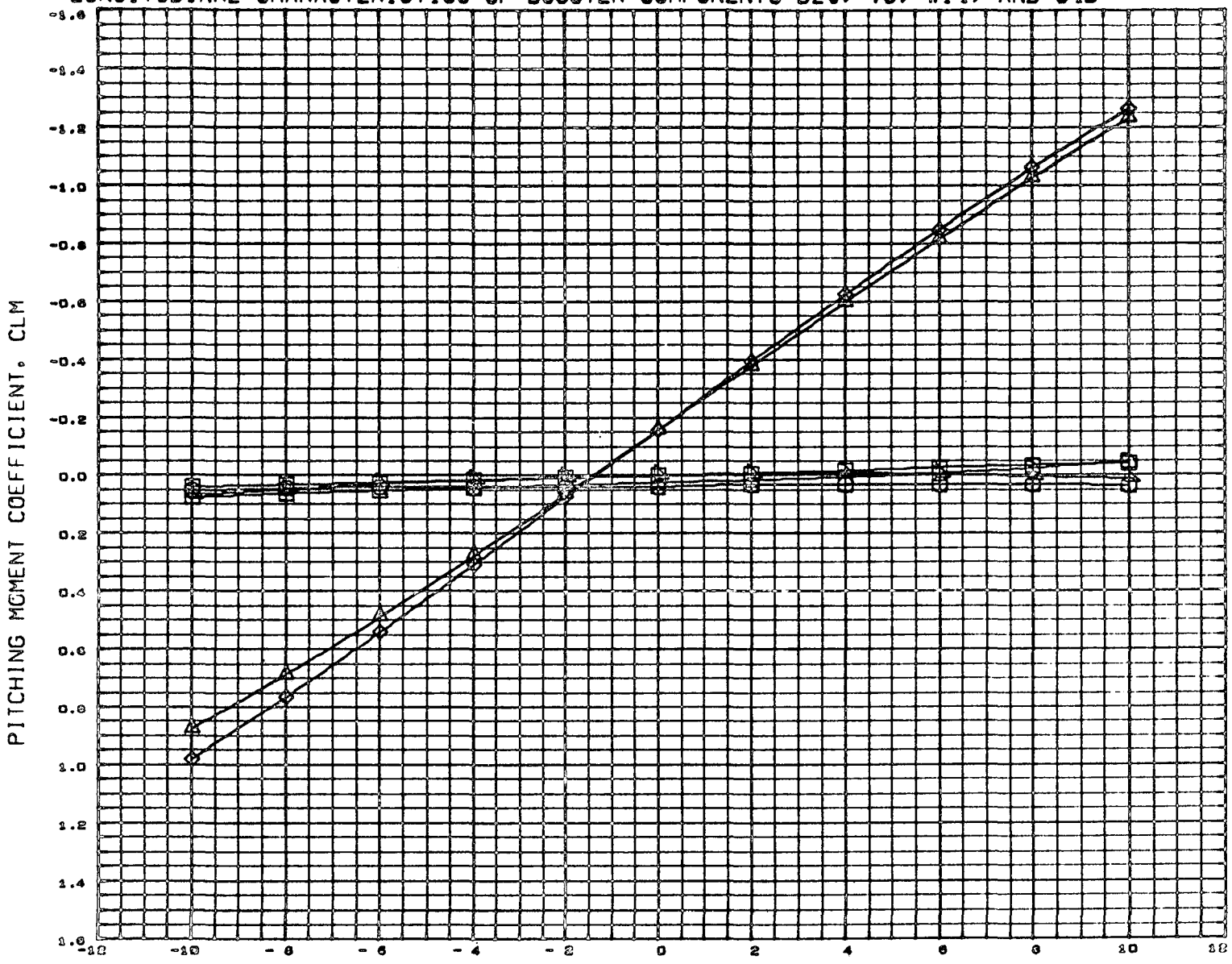


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)		A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)		A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)		A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)		A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)		A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.100

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

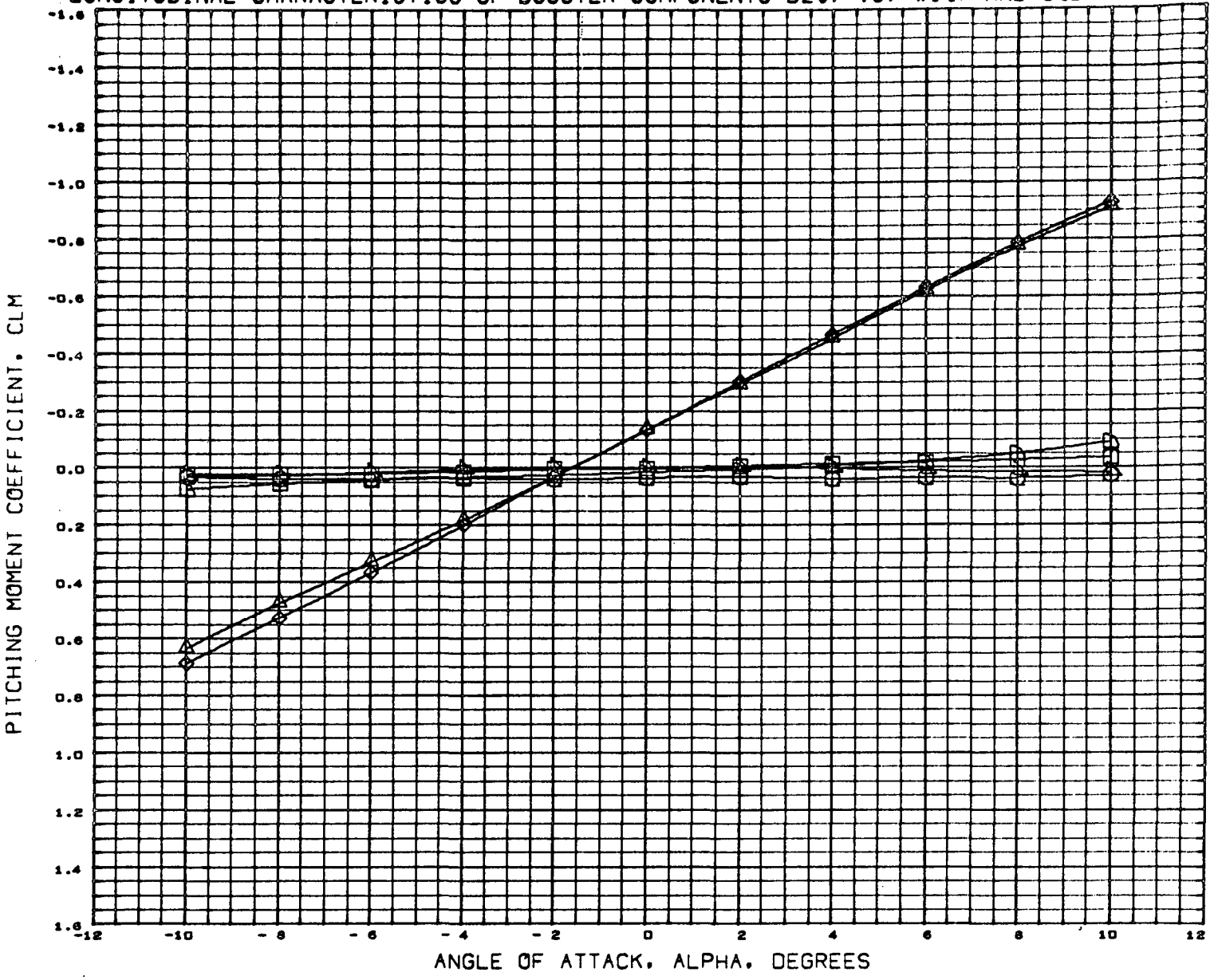


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)	○	A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)	△	A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)	◇	A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)	□	A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)	▽	A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)	◁	MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.460

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

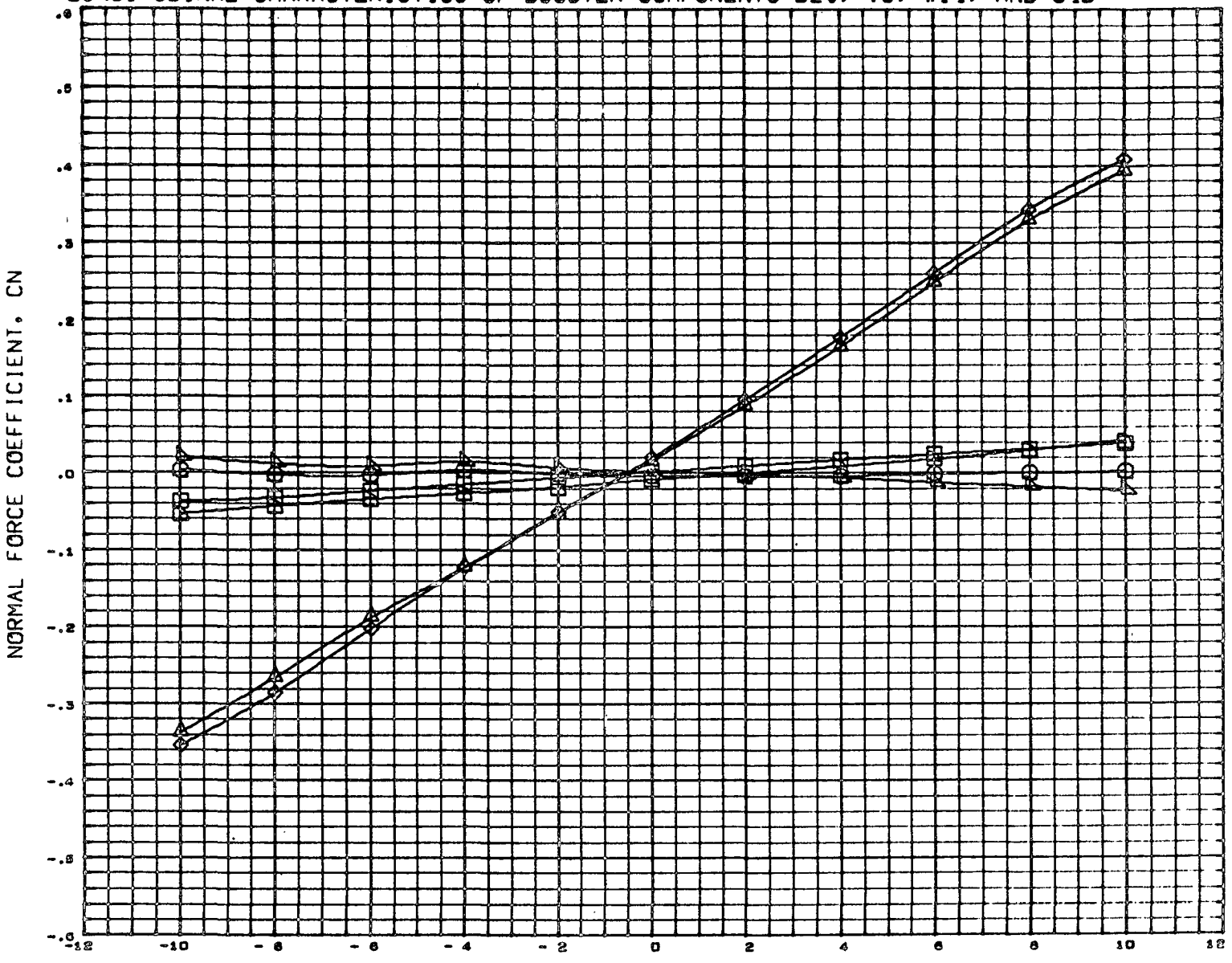


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)		A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)		A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)		A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)		A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)		A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.960

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

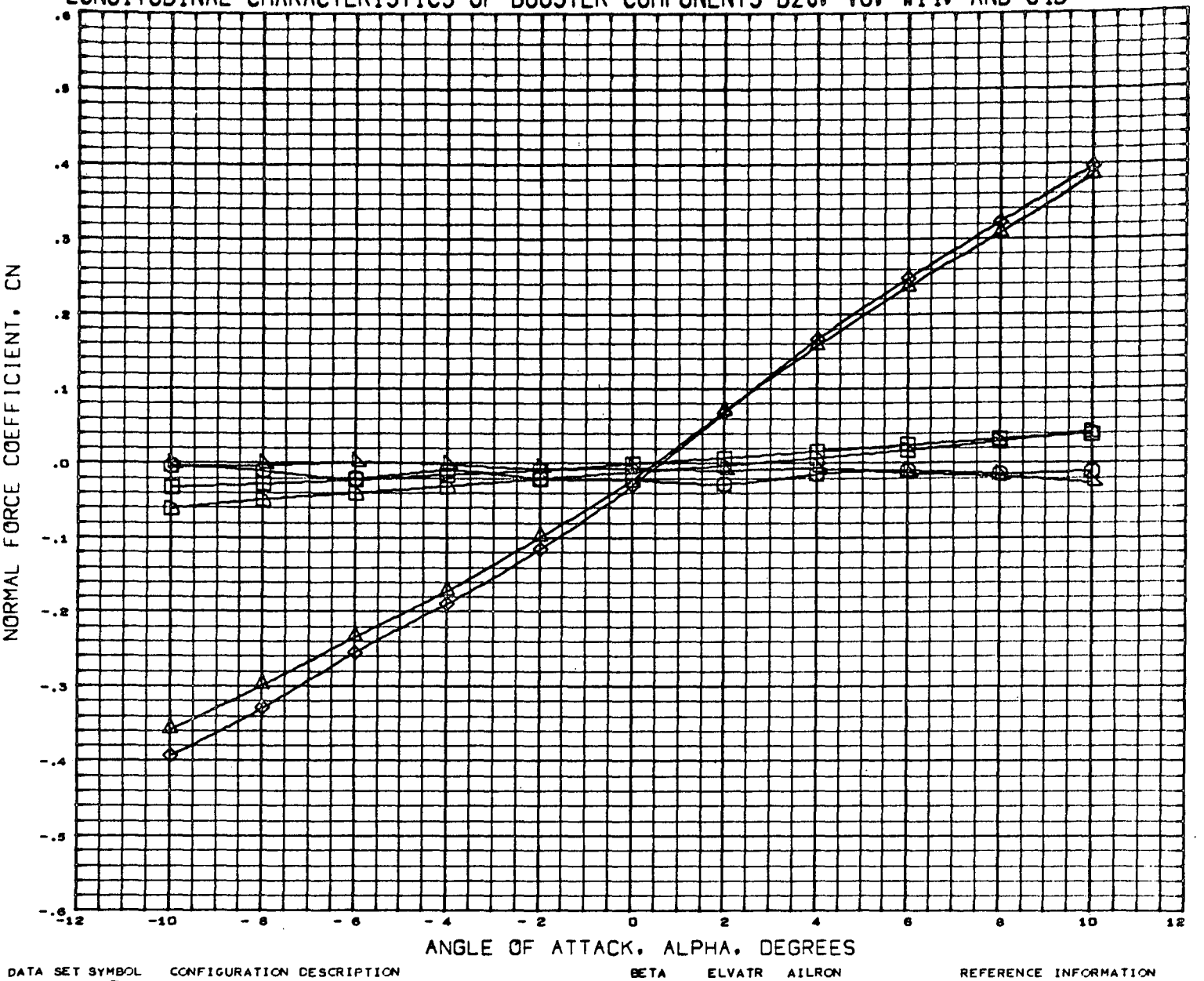


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)		A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)		A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)		A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)		A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)		A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

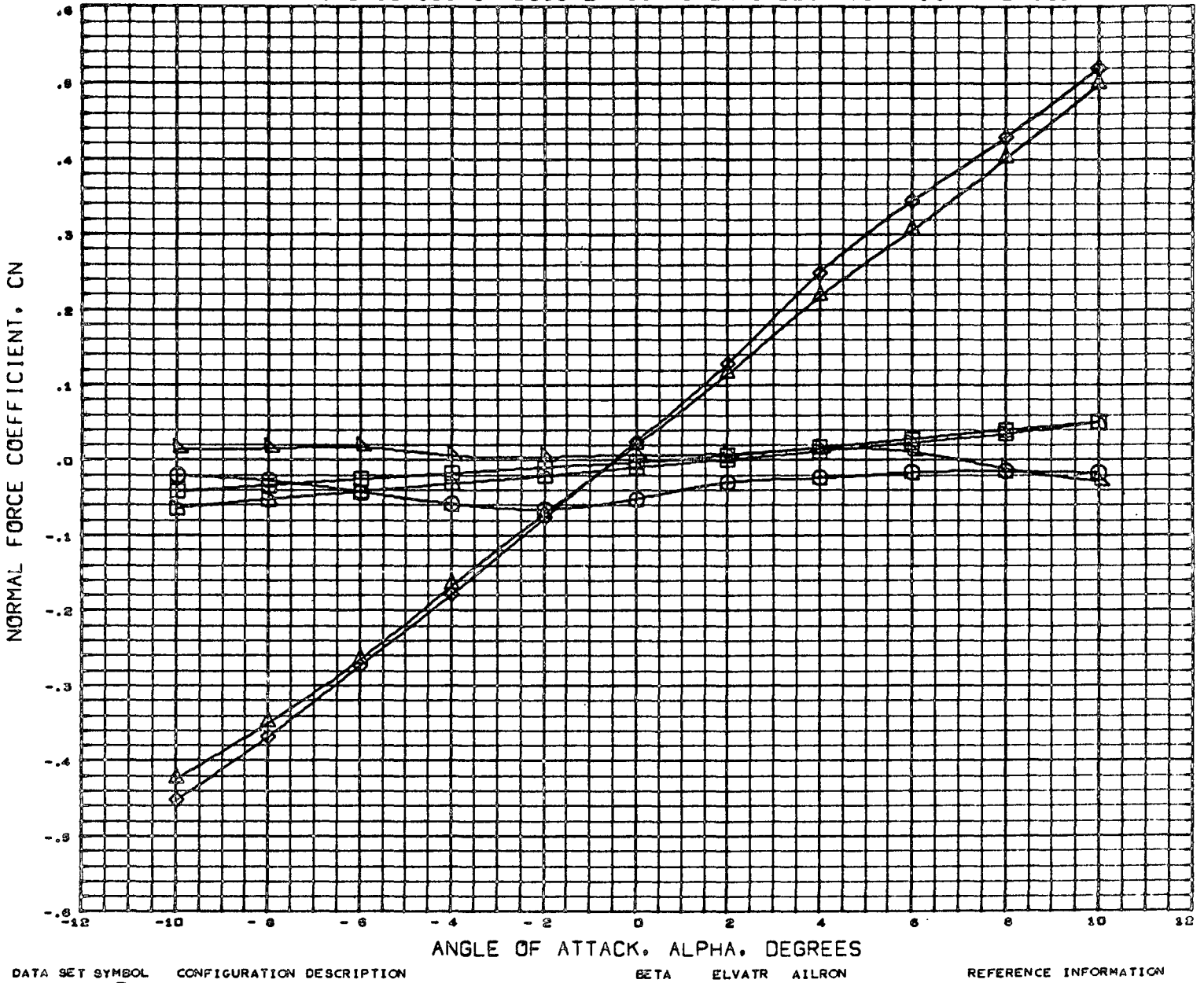


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)		A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)		A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)		A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)		A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)		A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

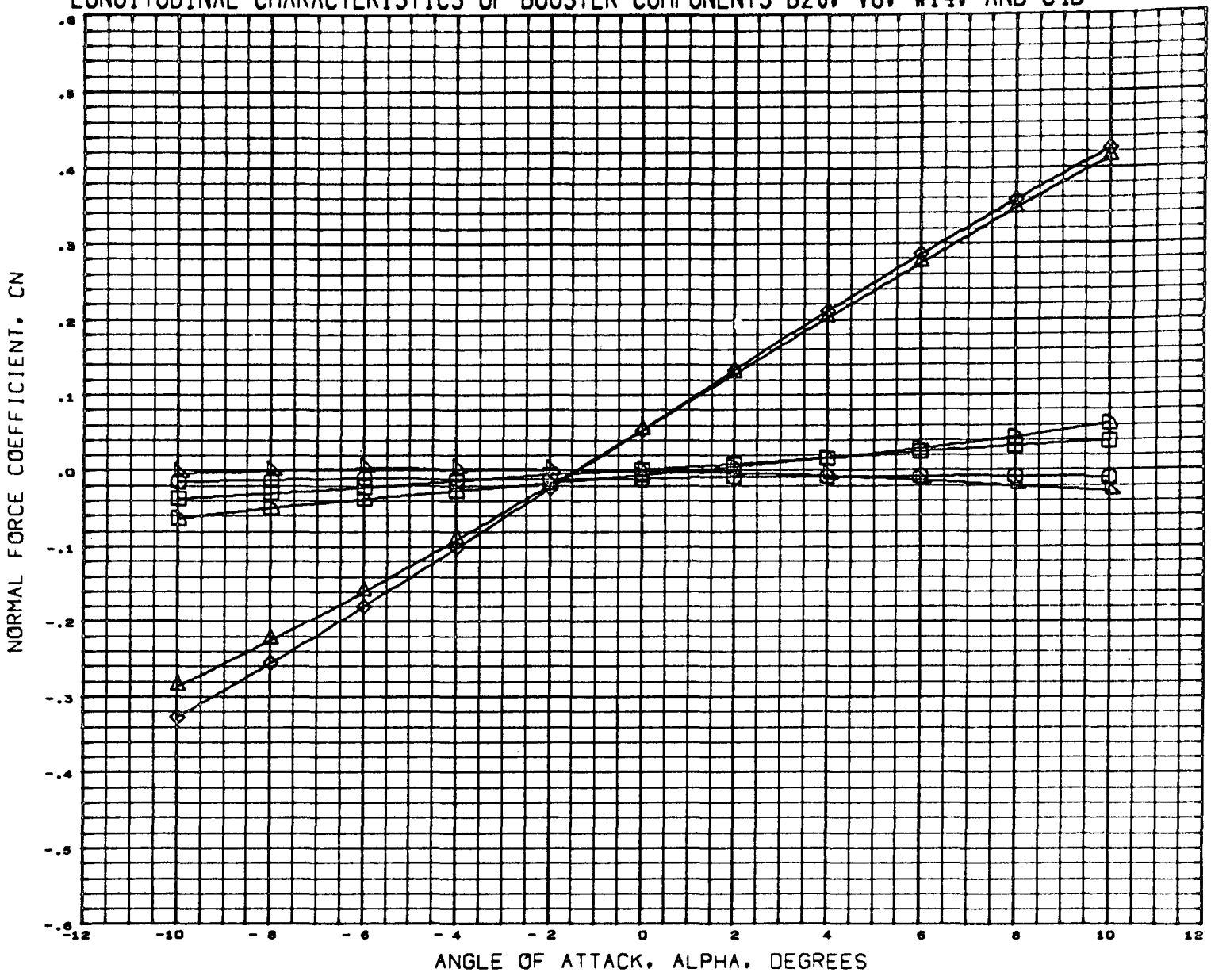


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)		A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)		A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)		A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)		A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)		A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.100

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

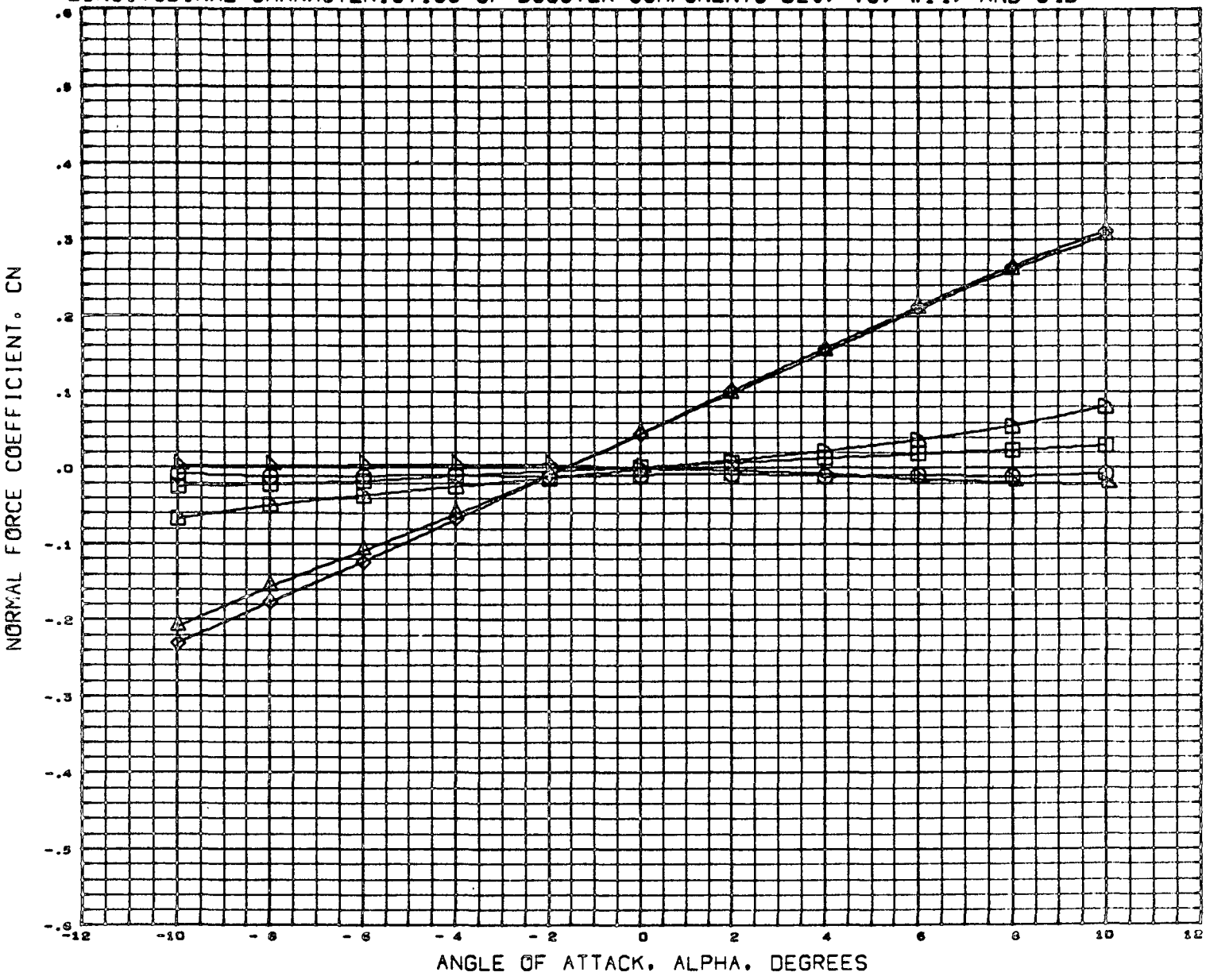


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)	○	A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)	◇	A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)	□	A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)	△	A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)	◇	A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)	△	MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.460

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

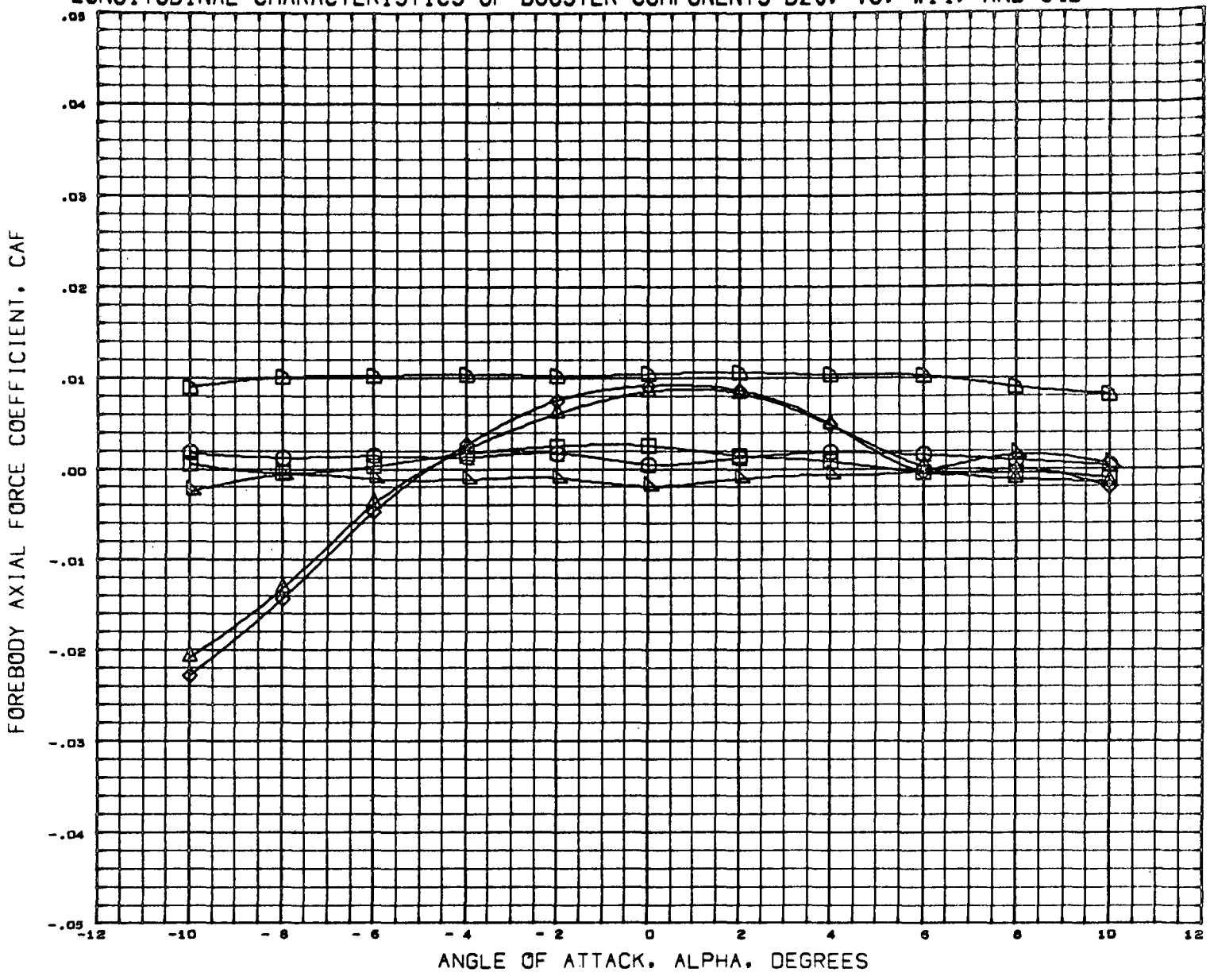


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)	○	A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)	□	A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)	◇	A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)	△	A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)	▽	A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.960

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

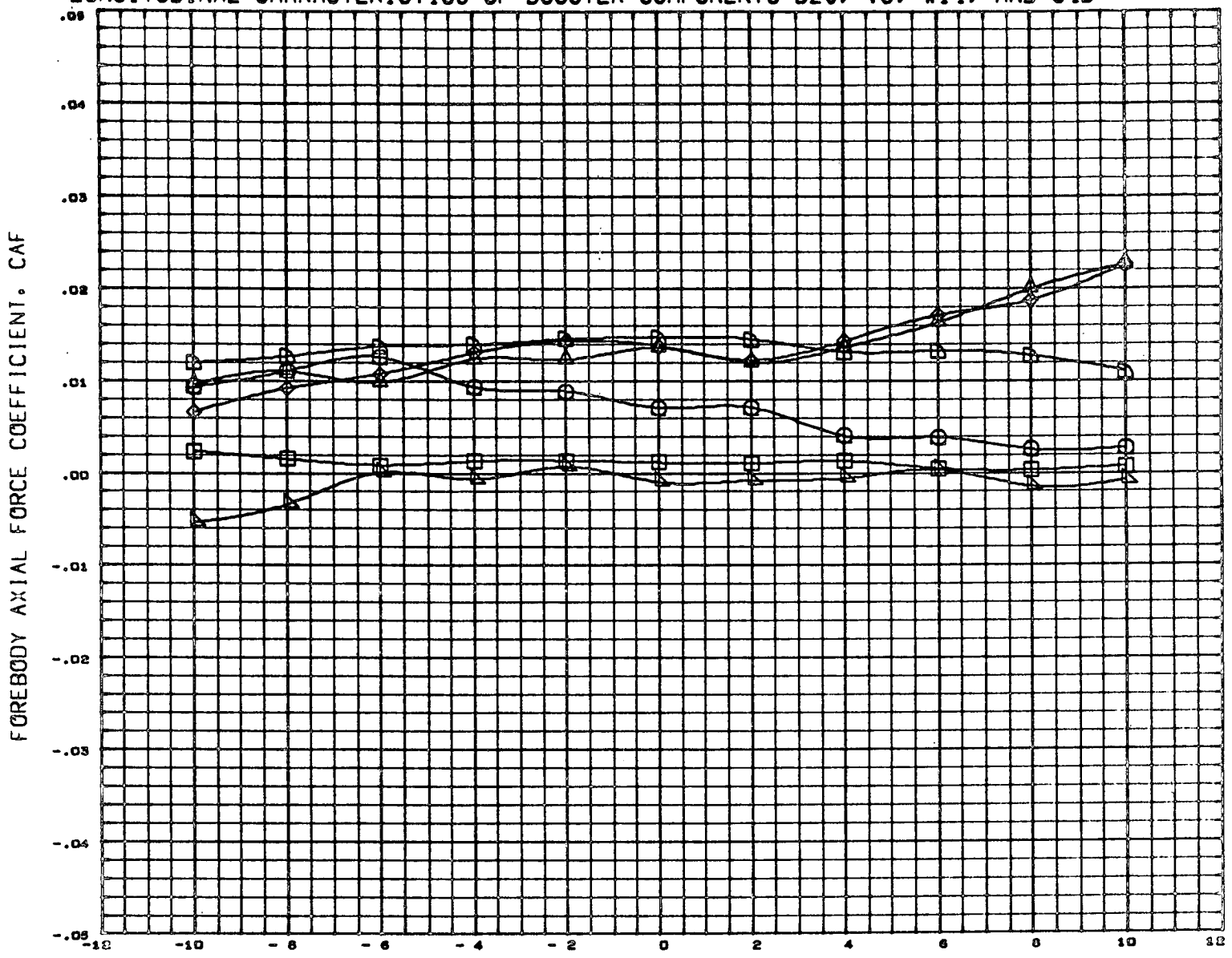


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)		A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)		A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)		A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)		A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)		A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B



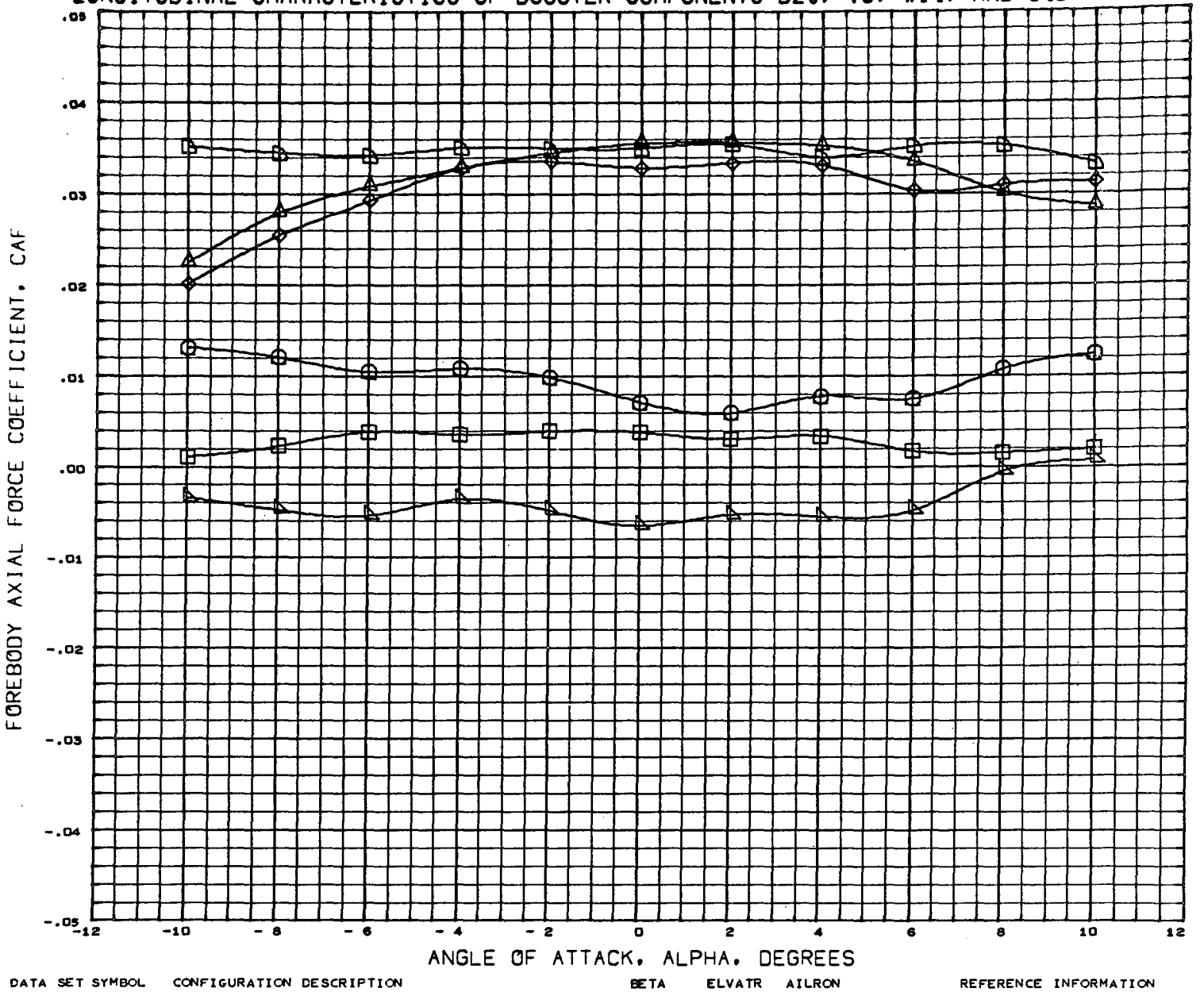
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)		A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)		A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)		A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)		A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)		A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

3

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

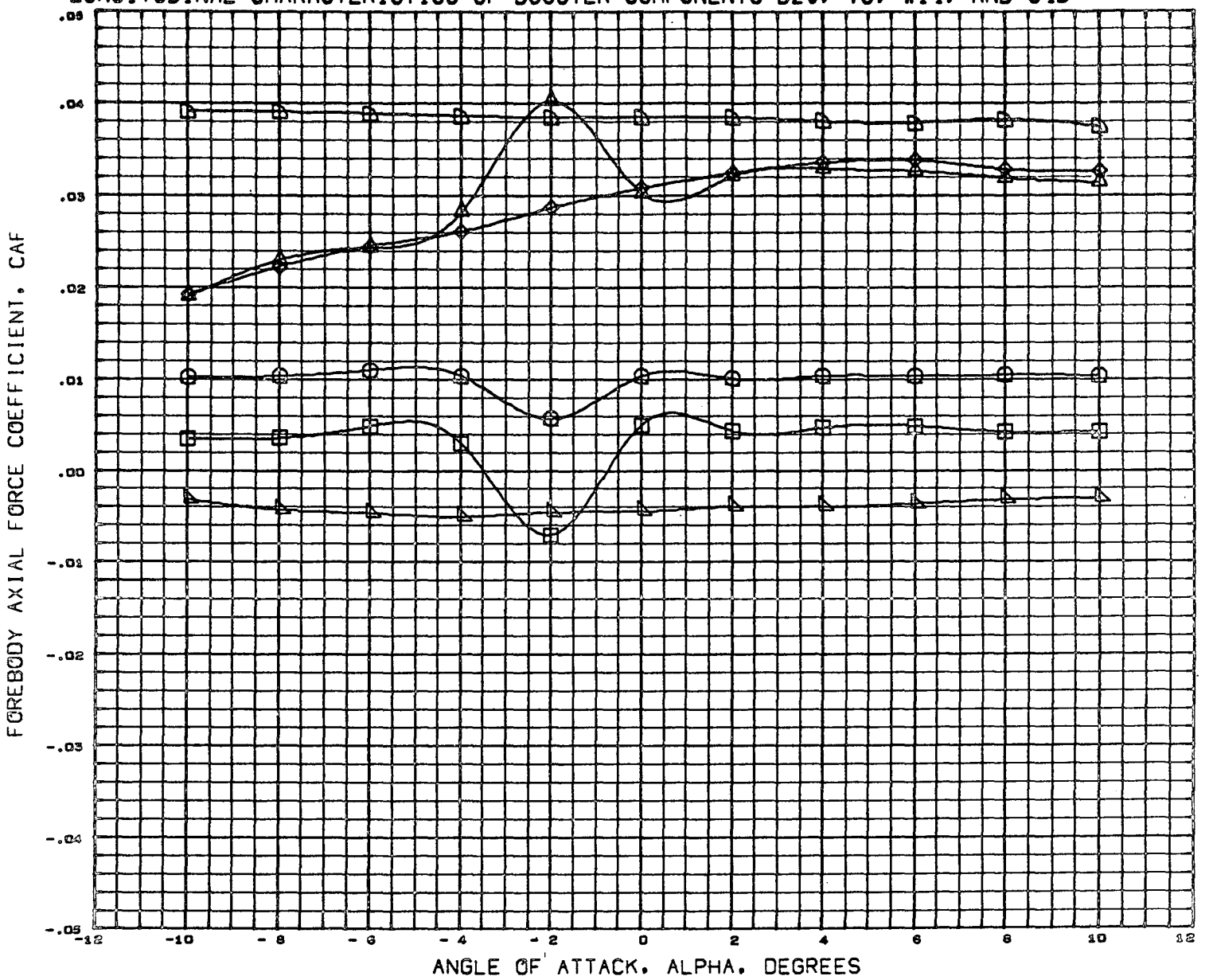


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)	○	A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)	△	A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)	◇	A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)	□	A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)	▽	A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.100

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

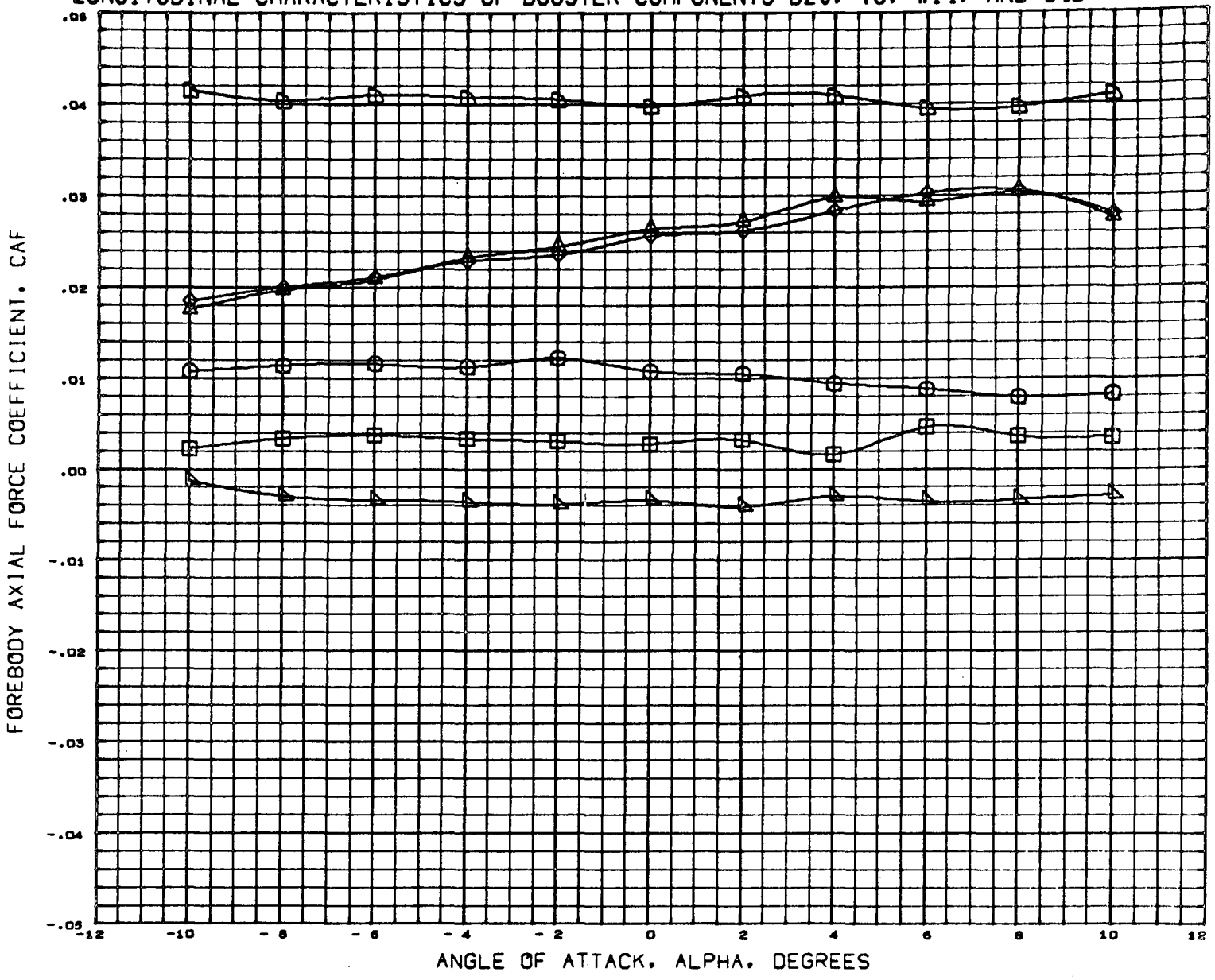


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)		A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)		A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)		A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)		A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)		A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.460

REFERENCE INFORMATION		
SREF	15.6360	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER COMPONENTS B20, V8, W14, AND C4B

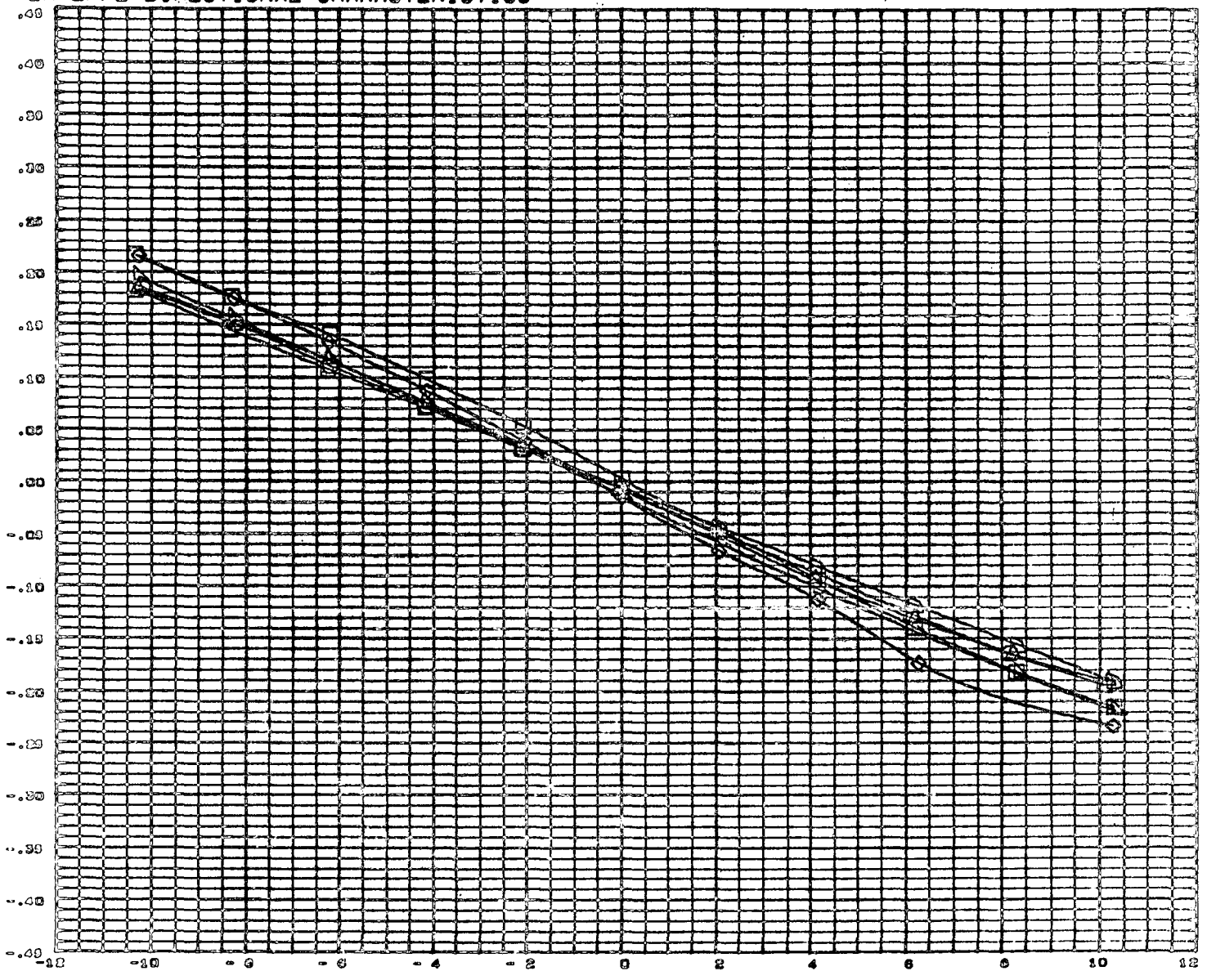


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A32100)	○	A3205A-A3203A, DELTA DUE TO V8 OF GD BOOSTER	0.000	0.000	0.000
(A32101)	△	A3203A-A3202A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32102)	◇	A3204A-A3201A, DELTA DUE TO W14 OF GD BOOSTER	0.000		
(A32103)	□	A3202A-A3201A, DELTA DUE TO C4B OF GD BOOSTER	0.000		
(A32104)	▽	A3204A-A3203A, DELTA DUE TO C4B OF GD BOOSTER	0.000	0.000	0.000
(J3201A)	⬠	MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.960

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL DIRECTIONAL CHARACTERISTICS



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.603	ALPHA	0.000	ELVATR	0.000
△	0.896	AILRON	0.000		
◇	0.997				
□	1.100				
▽	1.194				
○	1.400	REFERENCE FILE	TN-71-AE-01		

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	5.0850	INCHES
BREF	6.0990	INCHES
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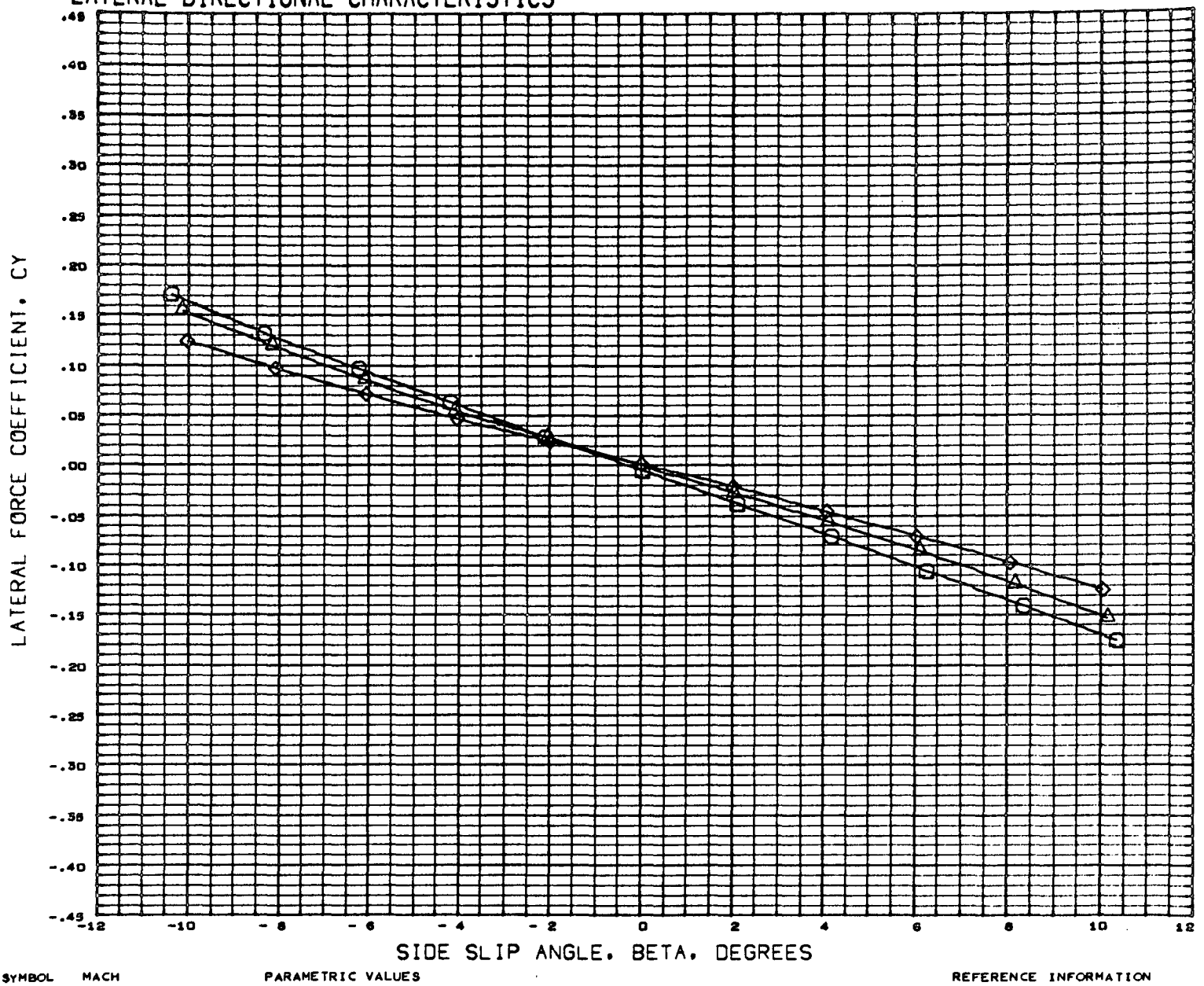
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL DIRECTIONAL CHARACTERISTICS

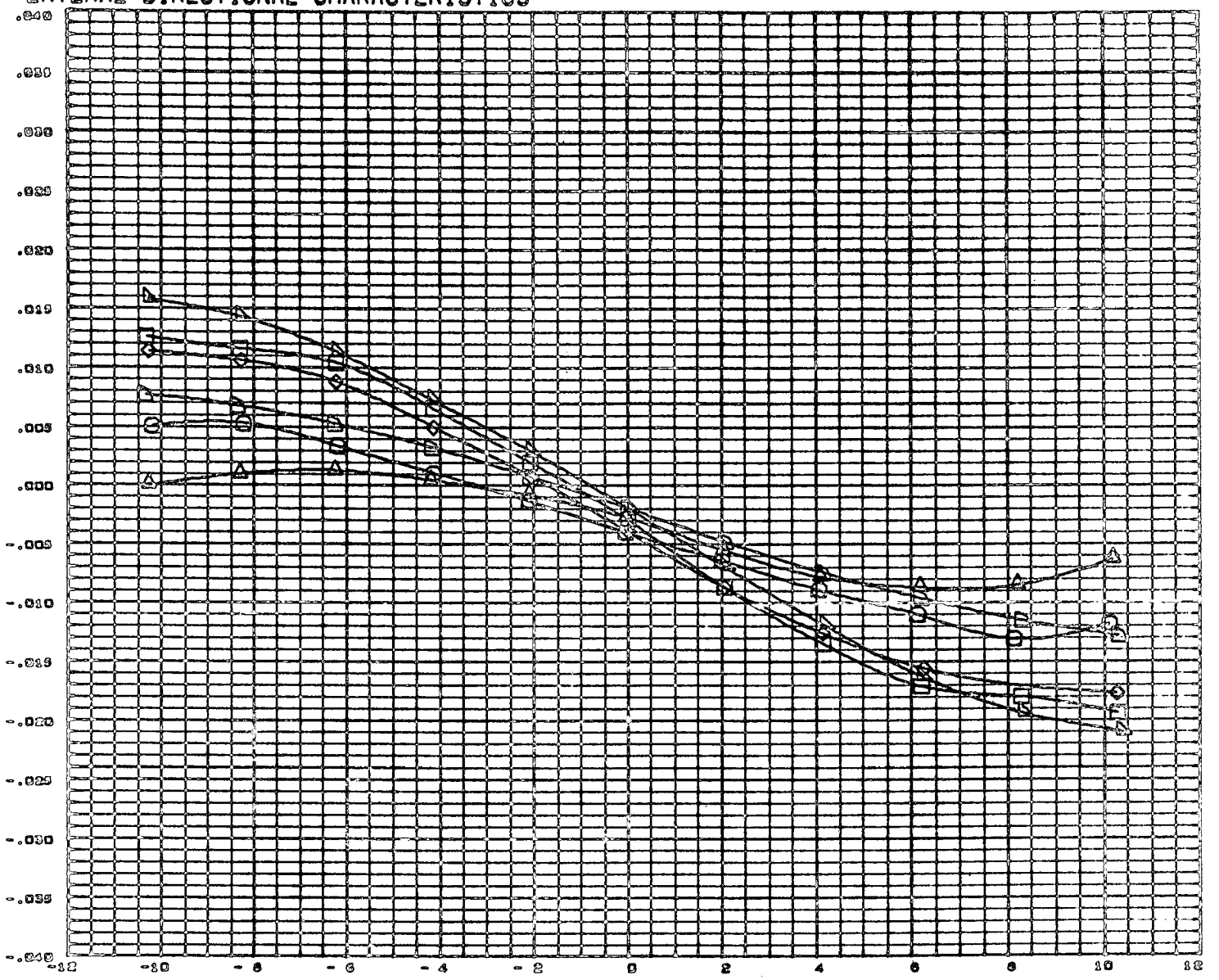


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.961	ALPHA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.959				

REFERENCE FILE TN-71-AE-01

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

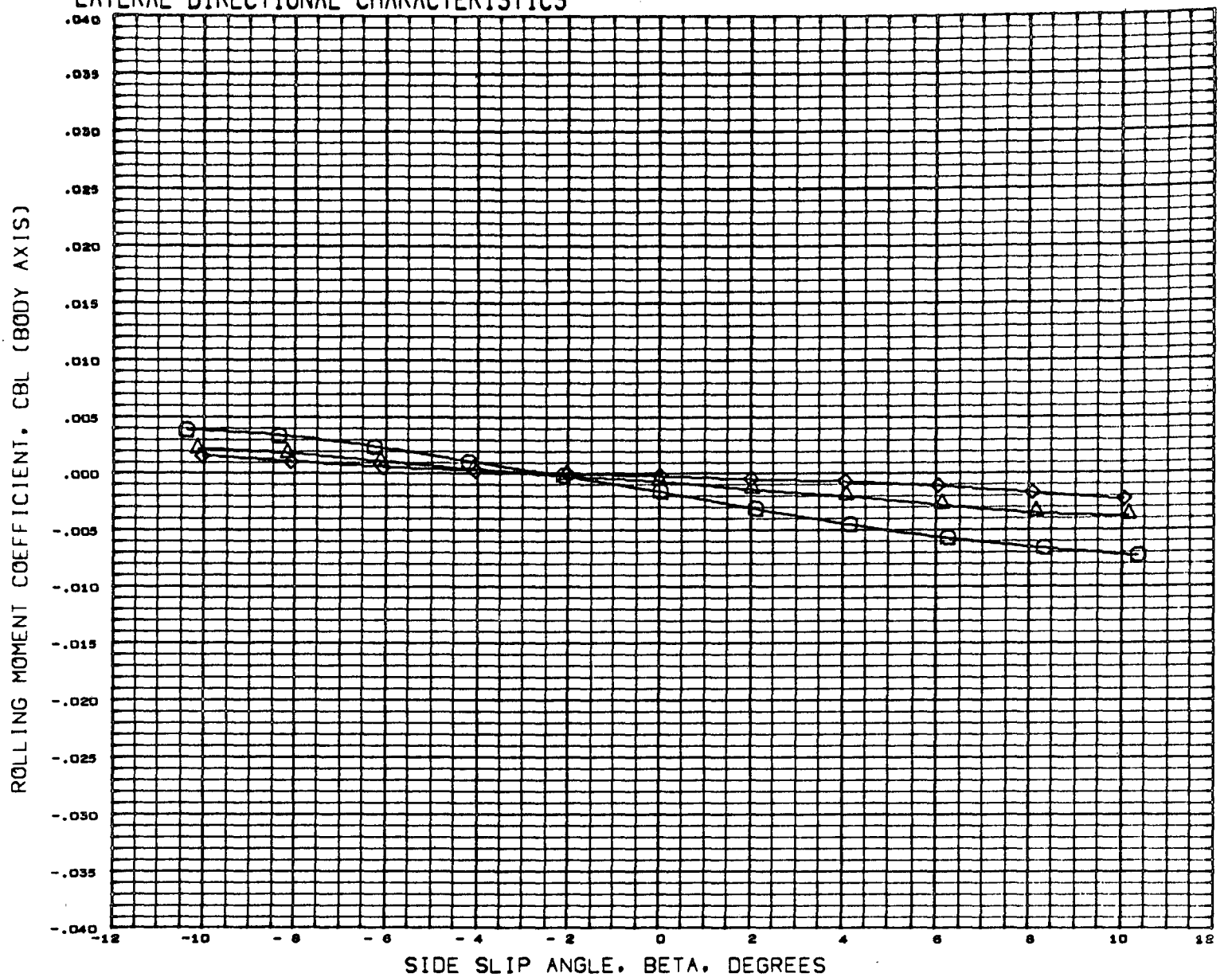
LATERAL DIRECTIONAL CHARACTERISTICS



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.603	ALPHA	0.000	ELVATR	0.000
△	0.806	AILRON	0.000		
◇	0.897				
□	1.100				
▽	1.194				
⬡	1.460	REFERENCE FILE		TN-71-AE-01	

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0930	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL DIRECTIONAL CHARACTERISTICS

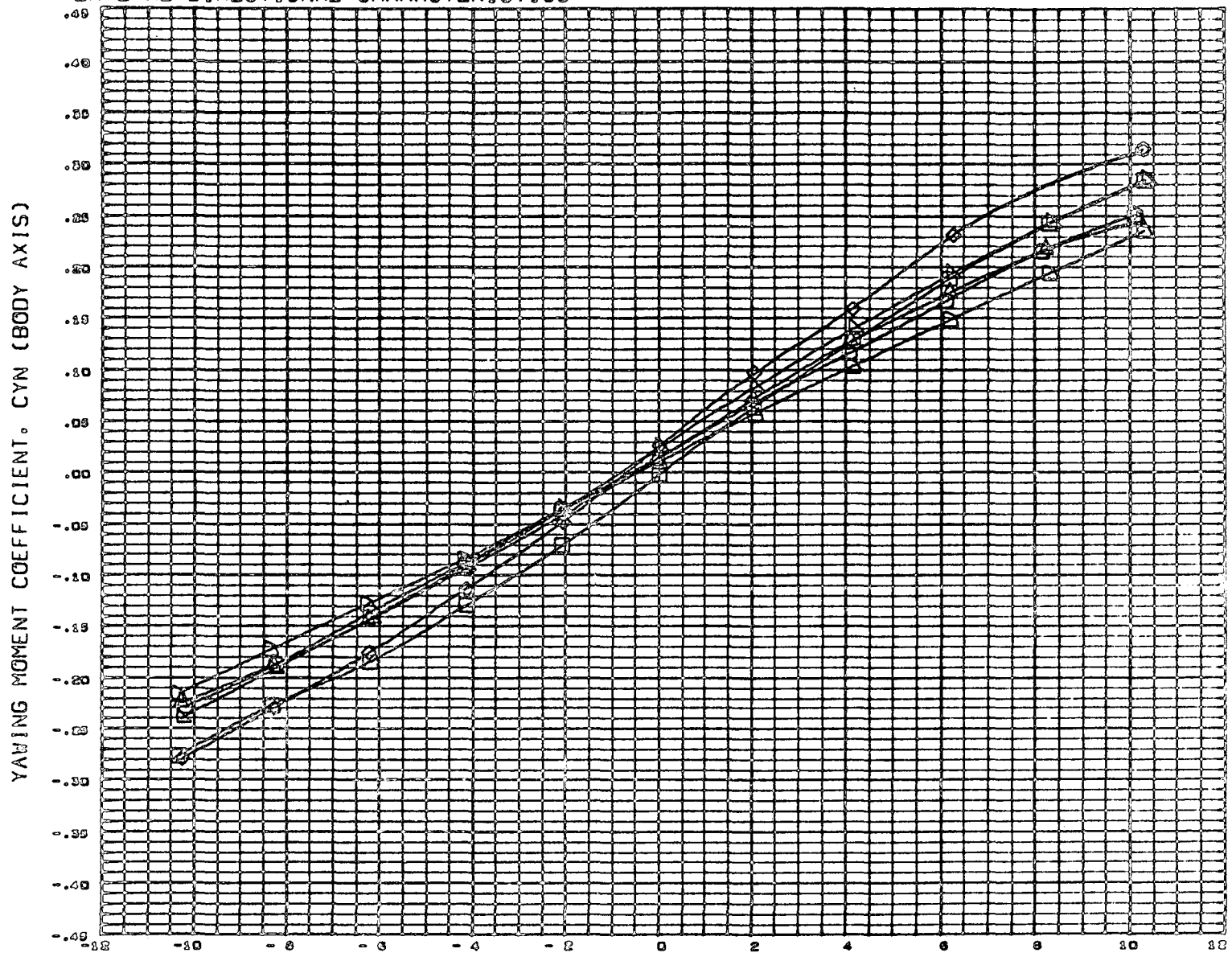


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.961	ALPHA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.959				

REFERENCE FILE TN-71-AE-01

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL DIRECTIONAL CHARACTERISTICS

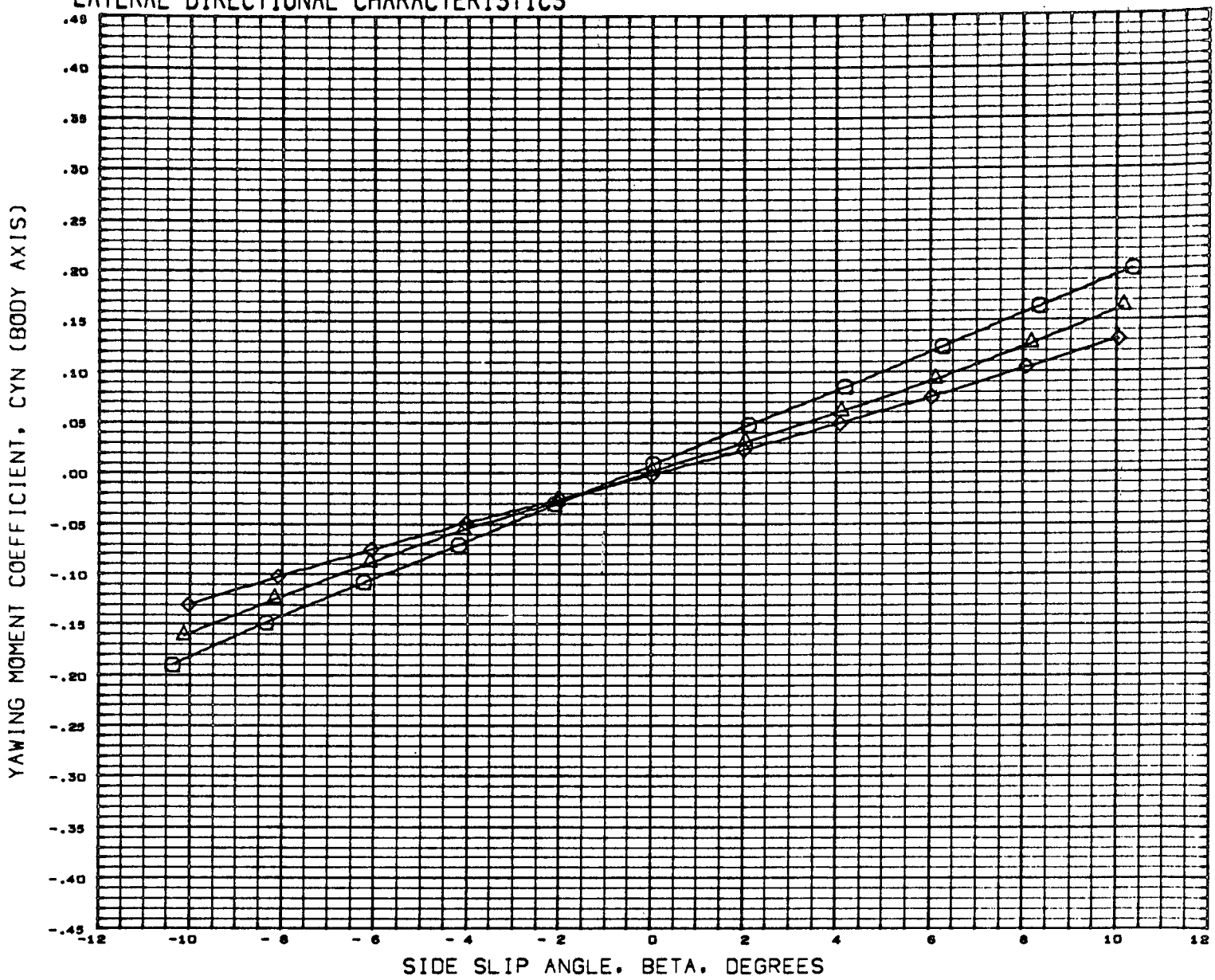


SYMBOL	MACH		PARAMETRIC VALUES		
○	0.003	ALPHA	0.000	ELVATR	0.000
△	0.090	AILRCN	0.000		
◇	0.097				
□	1.100				
▽	1.104				
◁	1.460	REFERENCE FILE	TN-71-AE-01		

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL DIRECTIONAL CHARACTERISTICS

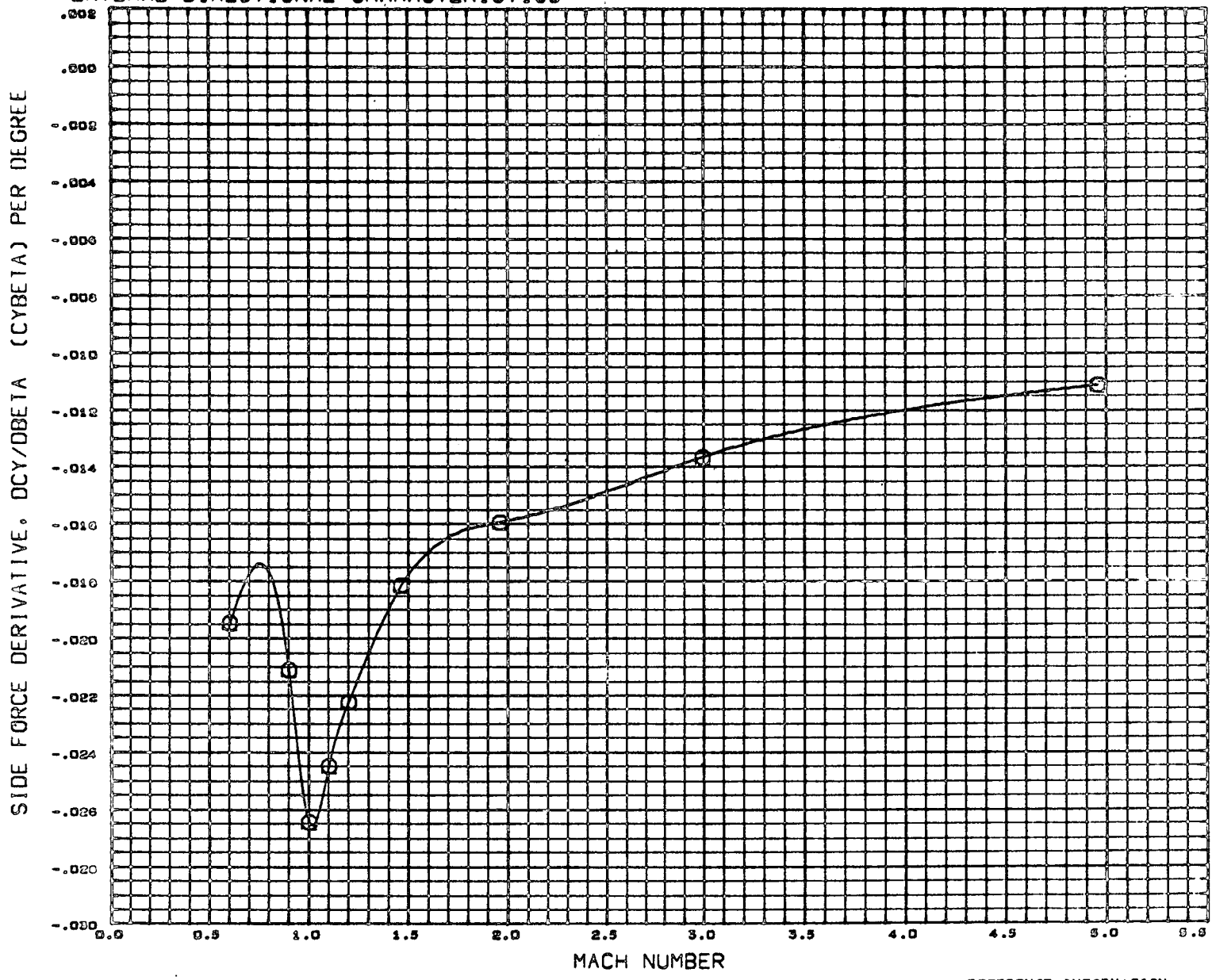


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.961	ALPHA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.959				

REFERENCE FILE TN-71-AE-01

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL DIRECTIONAL CHARACTERISTICS



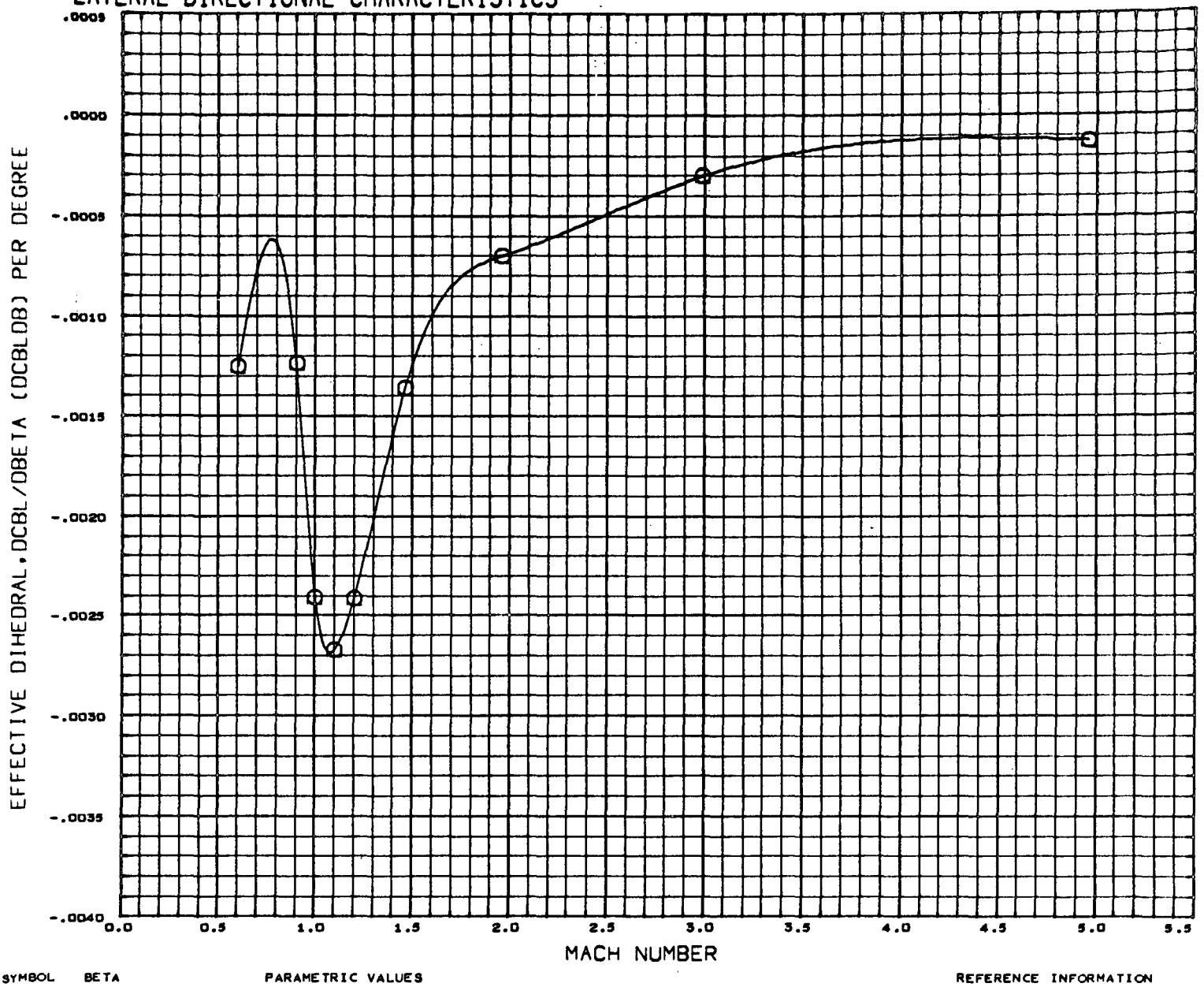
SYMBOL	BETA	PARAMETRIC VALUES			
O	0.000	ALPHA	0.000	ELVATR	0.000
		AILRON	0.000		

DATA HIST. CODE GI

REFERENCE INFORMATION

SREF	15.6360	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LATERAL DIRECTIONAL CHARACTERISTICS



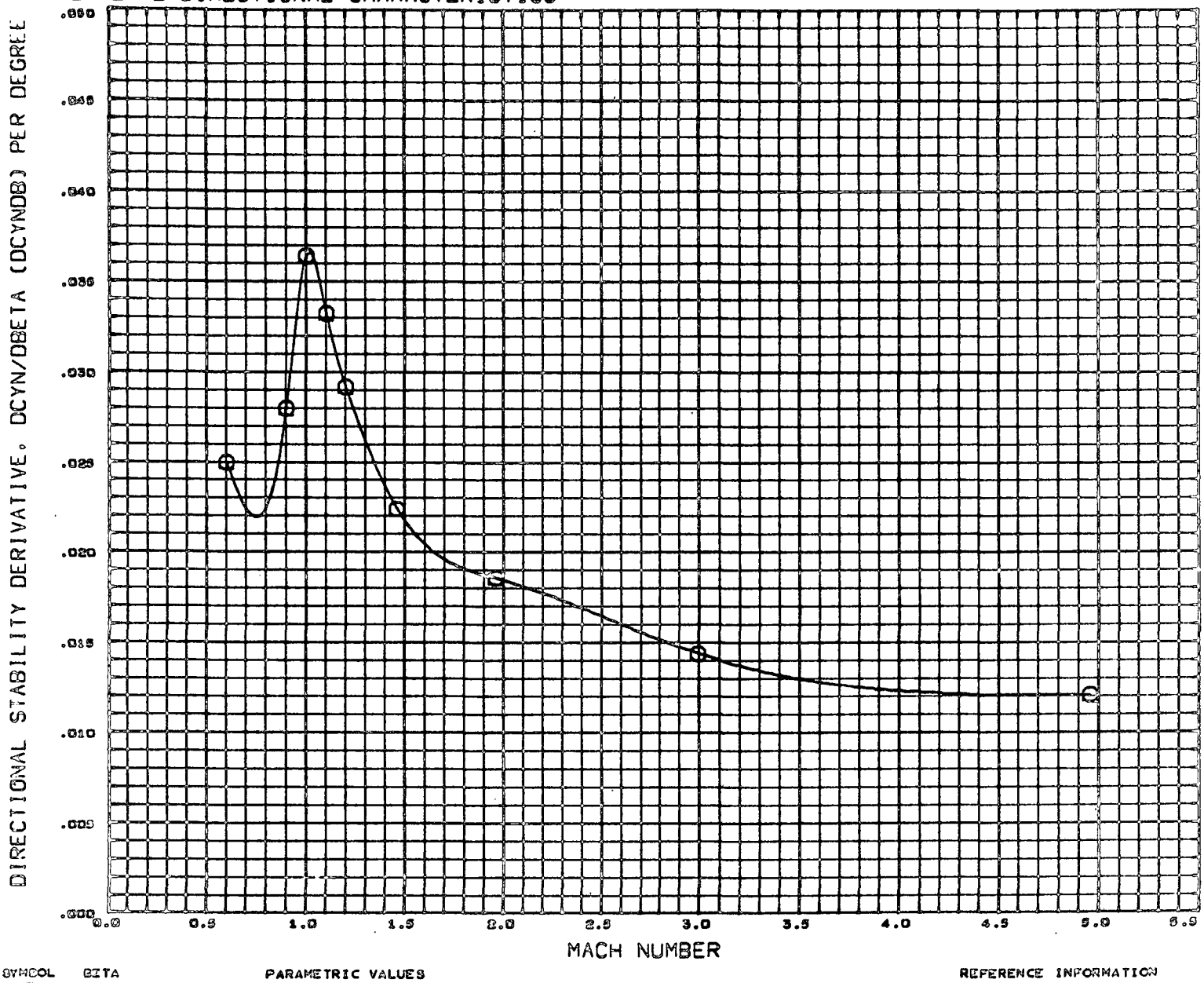
SYMBOL	BETA	PARAMETRIC VALUES			
O	0.000	ALPHA	0.000	ELVATR	0.000
		AILRON	0.000		

DATA HIST. CODE GI

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

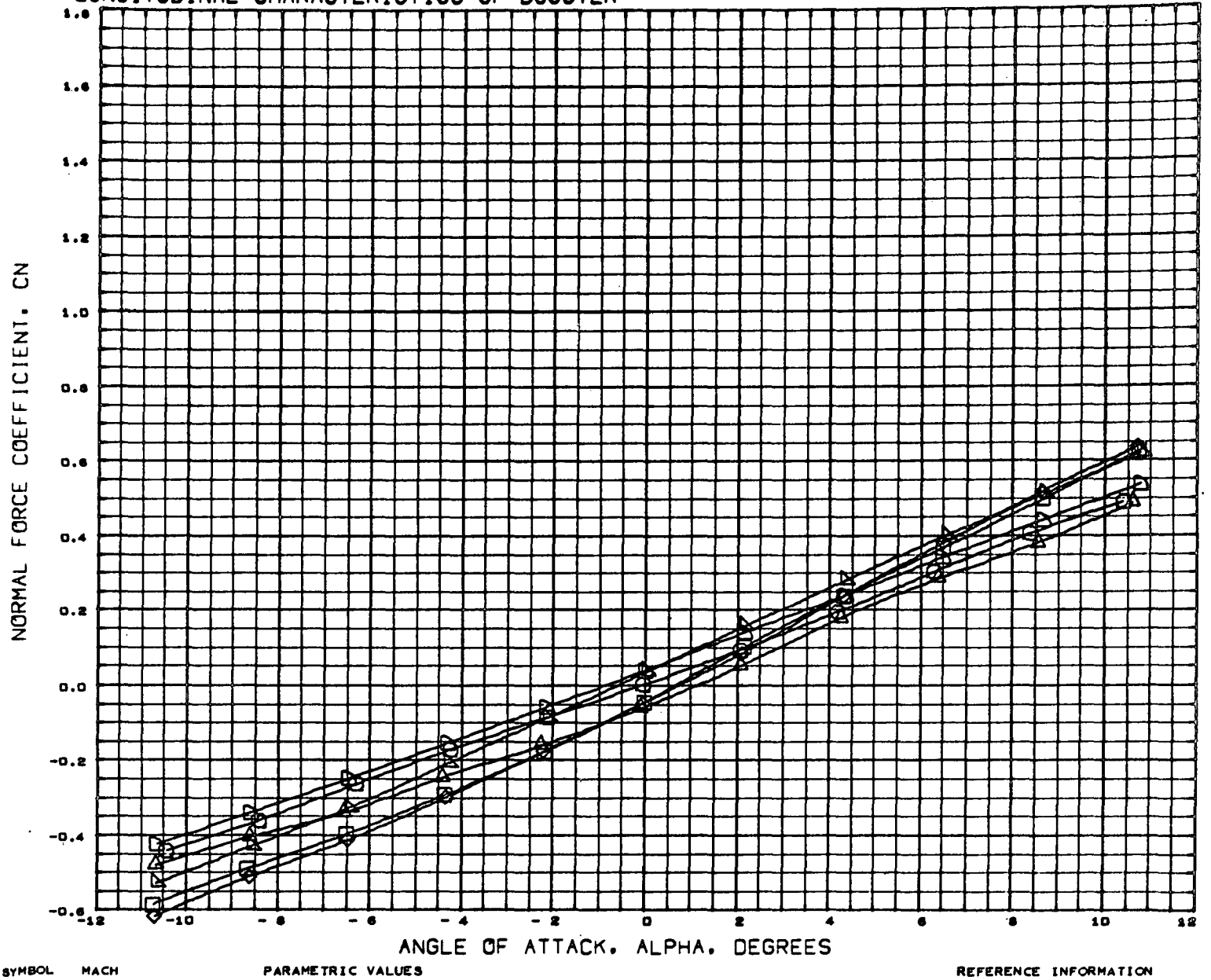
LATERAL DIRECTIONAL CHARACTERISTICS



SYMBOL	BETA	PARAMETRIC VALUES				REFERENCE INFORMATION		
O	0.000	ALPHA	0.000	ELVATR	0.000	SREF	15.6560	SQ IN
		AILRON	0.000			LREF	3.0950	INCHES
						BREF	6.0900	INCHES
						XMRP	0.0000	
						YMRP	0.0000	
						ZMRP	0.0000	
						SCALE	0.0039	SCALE

DATA HIST. CODE GI

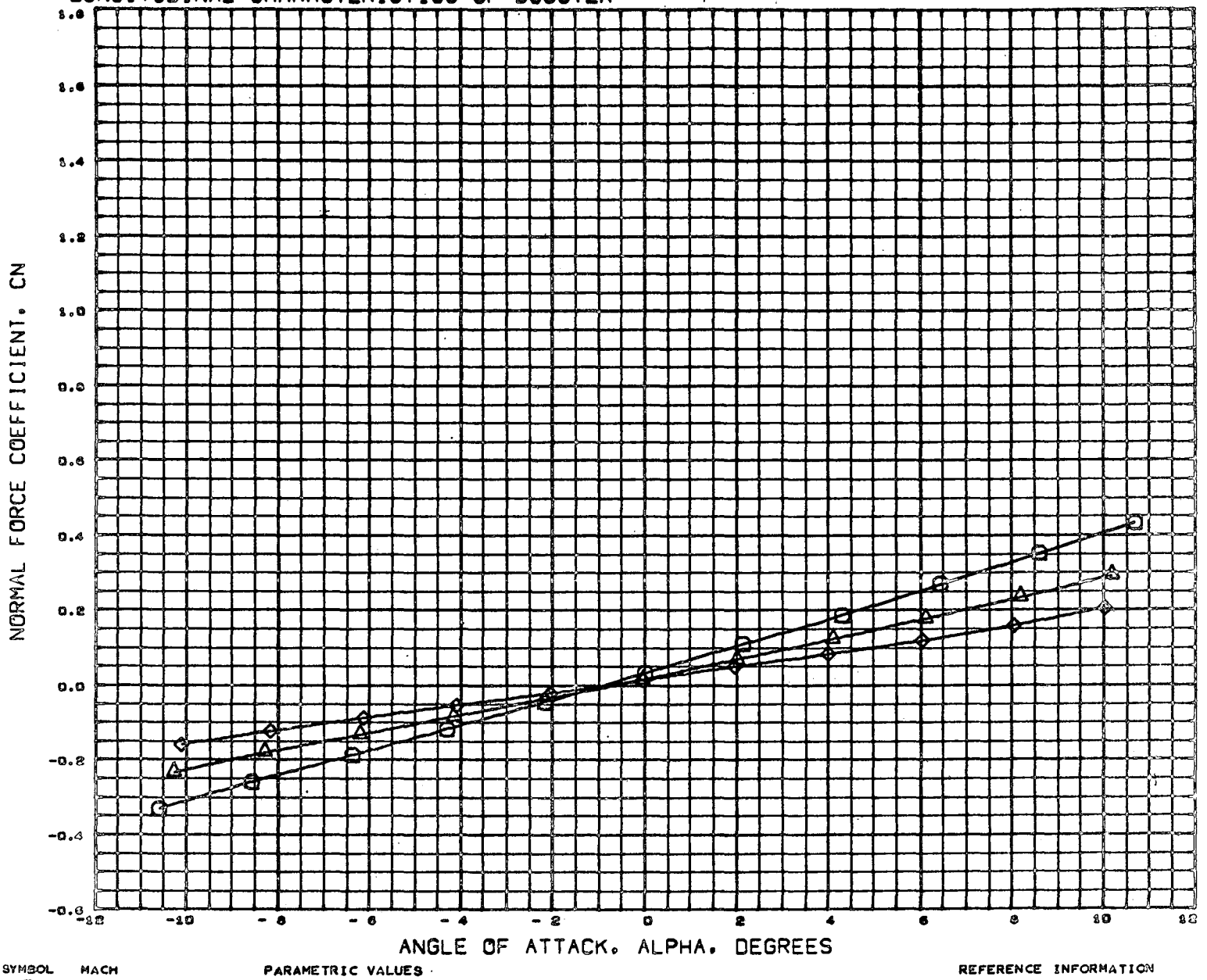
LONGITUDINAL CHARACTERISTICS OF BOOSTER



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.606	BETA	0.000	ELVATR	0.000
△	0.900	AILRON	0.000		
◇	0.998				
□	1.097				
▽	1.197				
D	1.466	DATA HIST. CODE	*E		

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



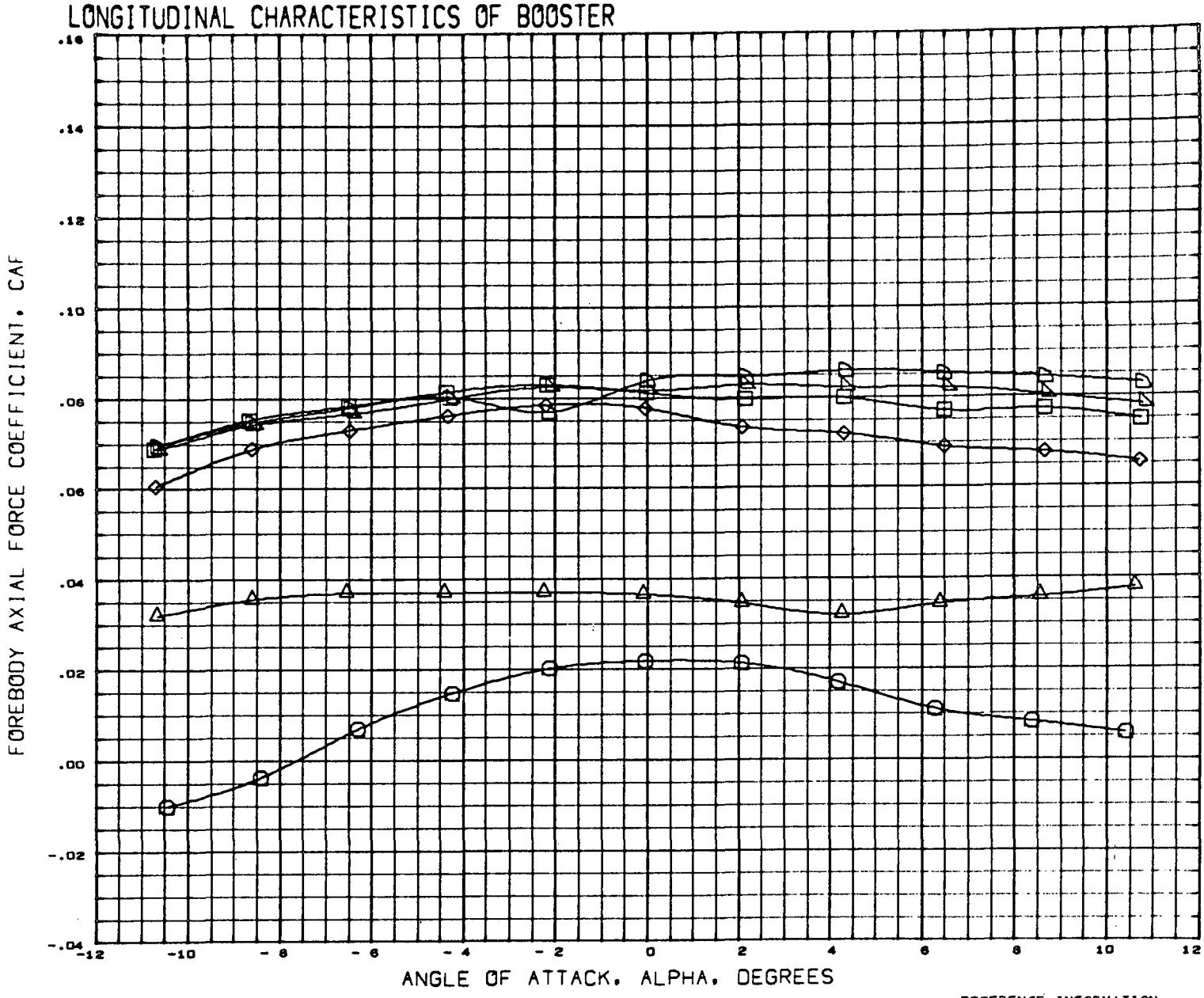
SYMBOL	MACH		PARAMETRIC VALUES		
○	1.959	BETA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.059				

DATA HIST. CODE *E

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

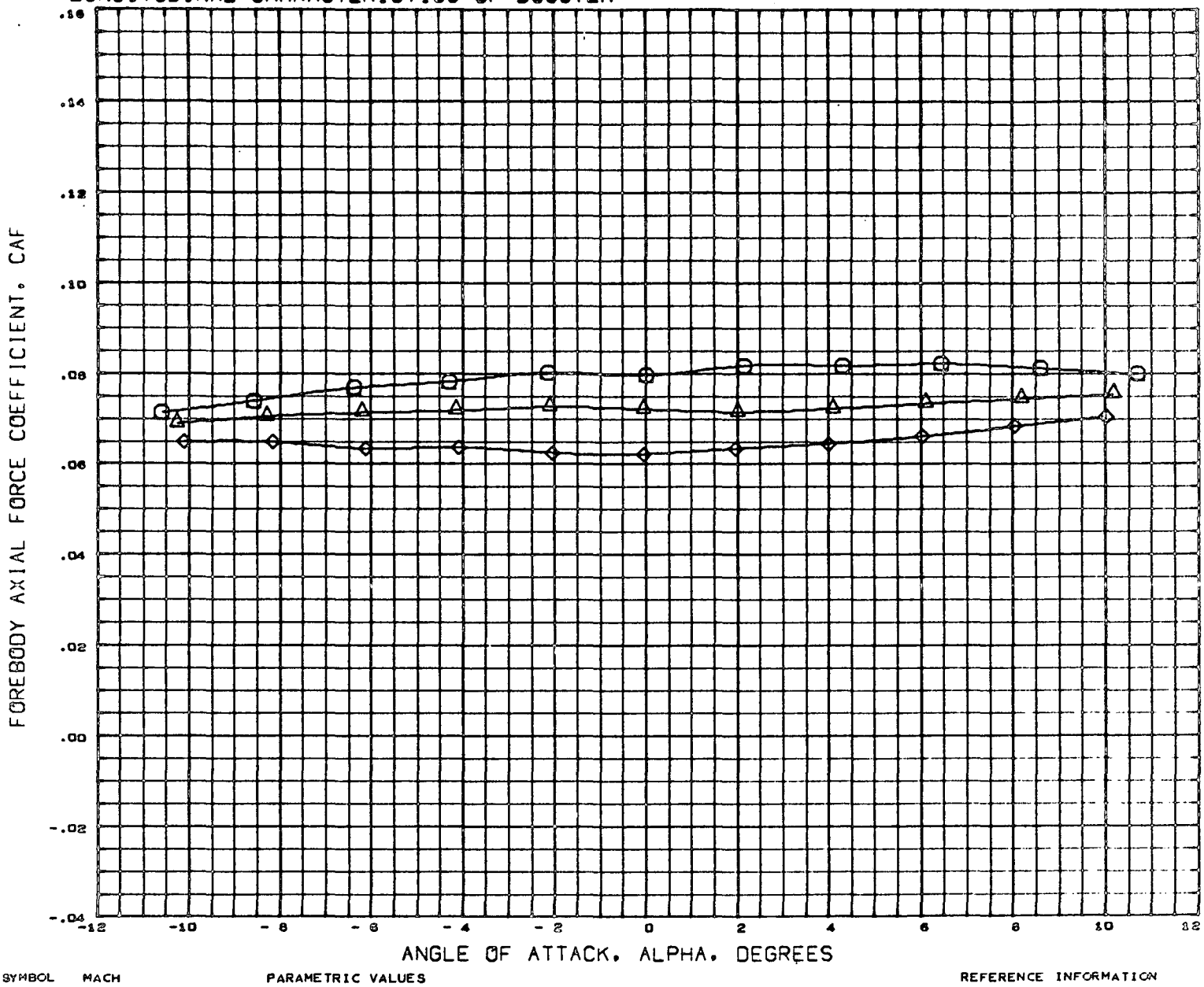
LONGITUDINAL CHARACTERISTICS OF BOOSTER



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.606	BETA	0.000	ELVATR	0.000
⋈	0.900	AILRON	0.000		
◇	0.998				
□	1.097				
⋈	1.197				
△	1.466	DATA HIST. CODE	*E		

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

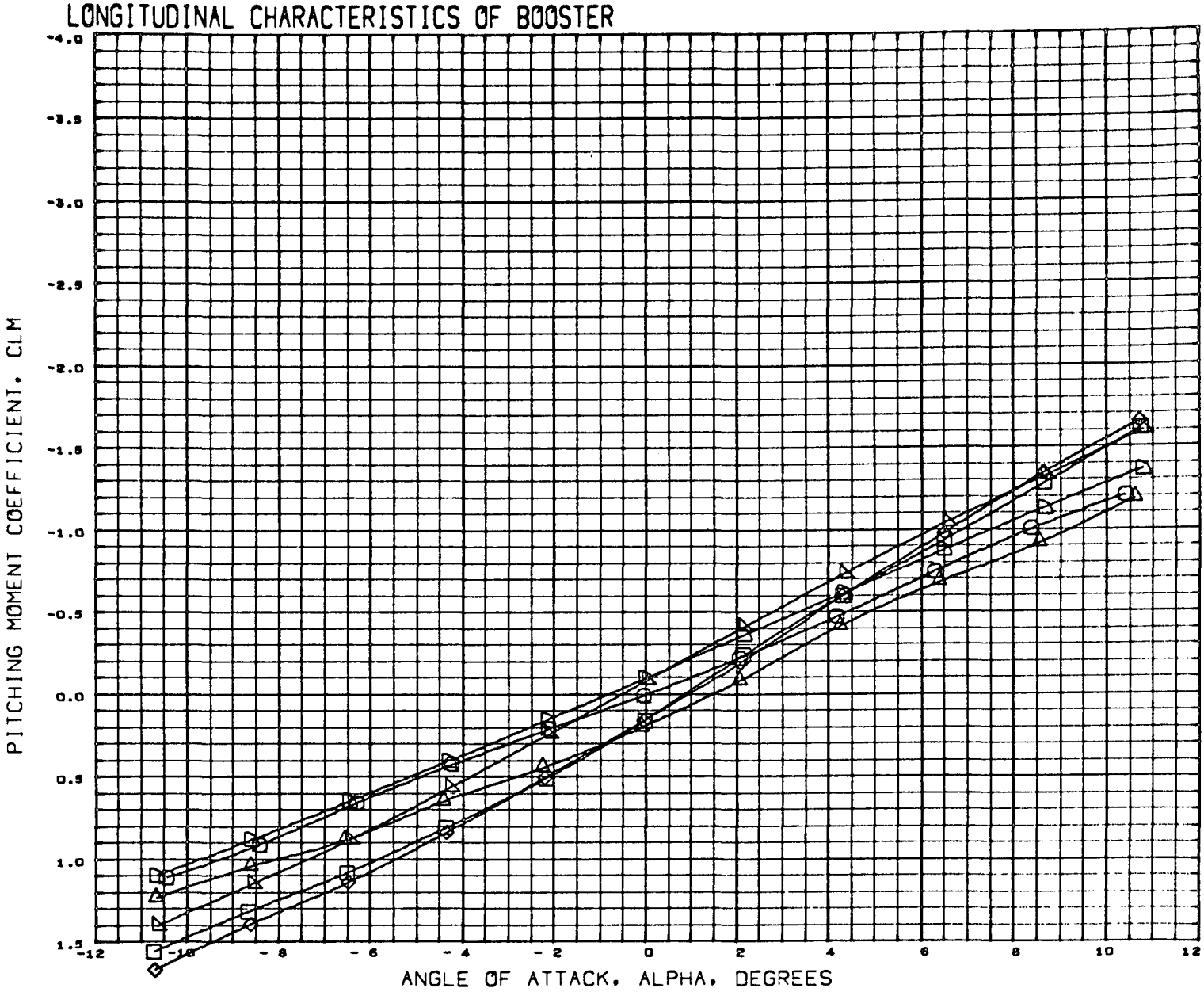


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.959	BETA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.939				

DATA HIST. CODE *E

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

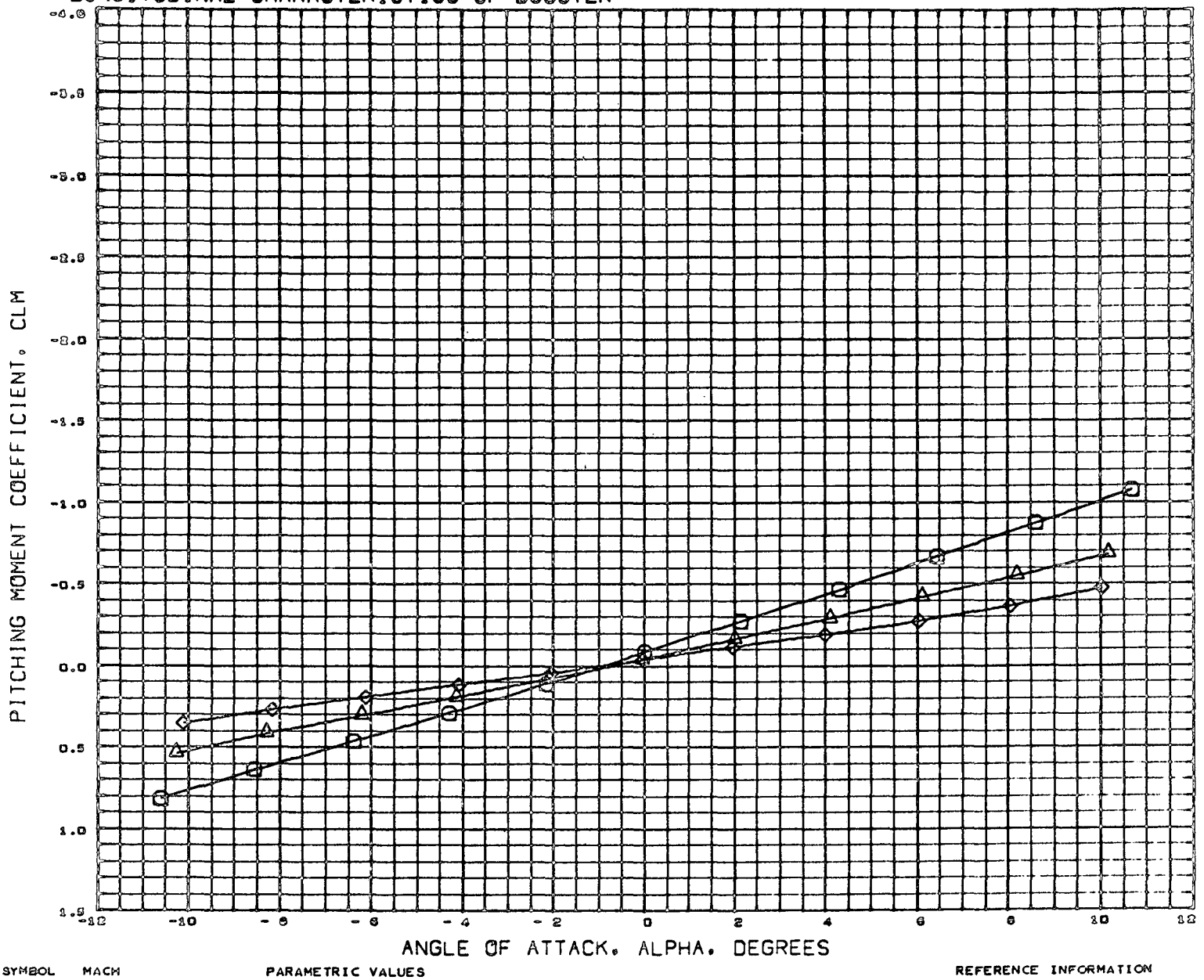


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.606	BETA	0.000	ELVATR	0.000
□	0.900	AILRON	0.000		
△	0.998				
◇	1.097				
↗	1.197				
↙	1.466	DATA HIST. CODE	*E		

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



SYMBOL	MACH	PARAMETRIC VALUES			
○	1.959	BETA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.099				

DATA HIST. CODE *E

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
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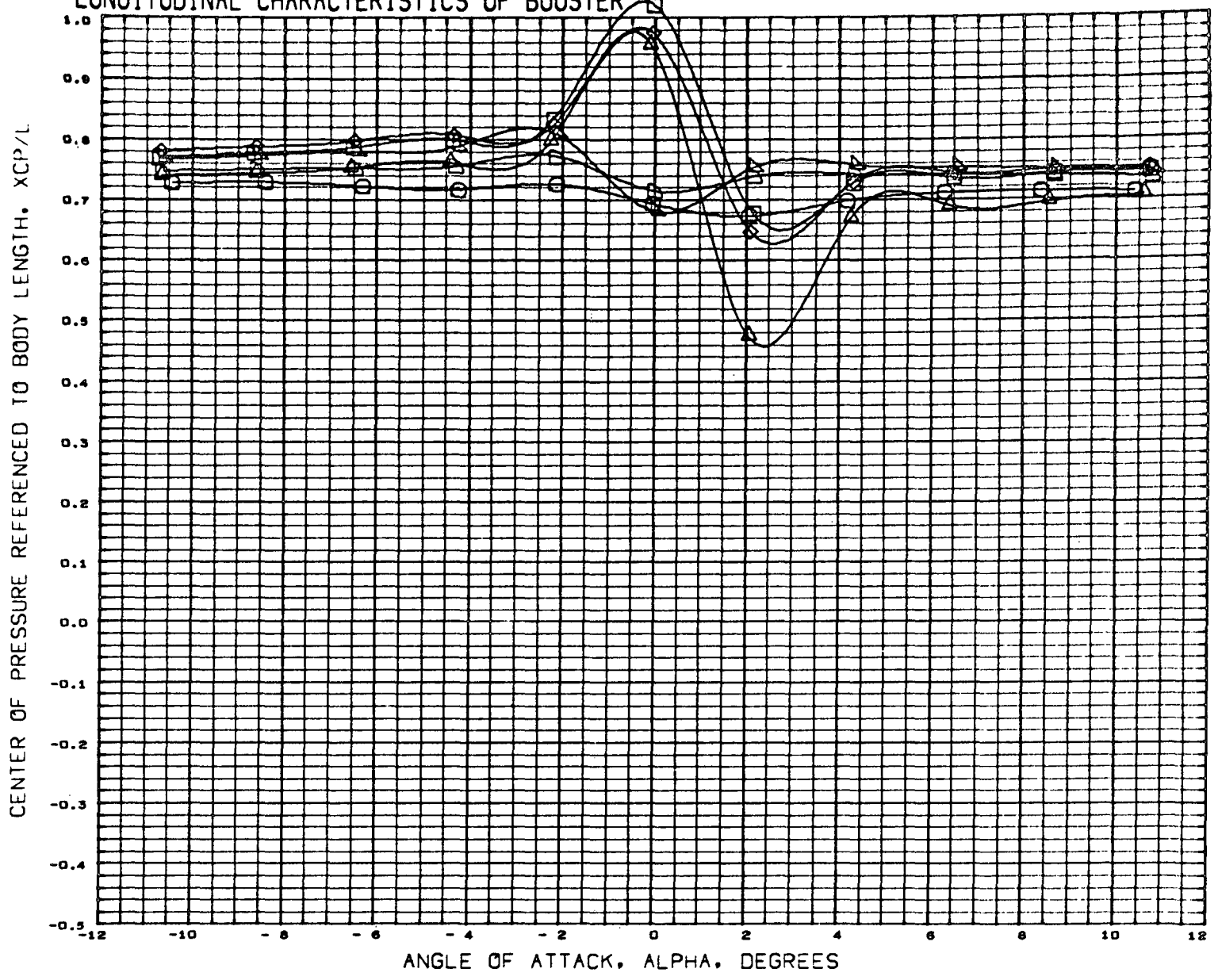
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

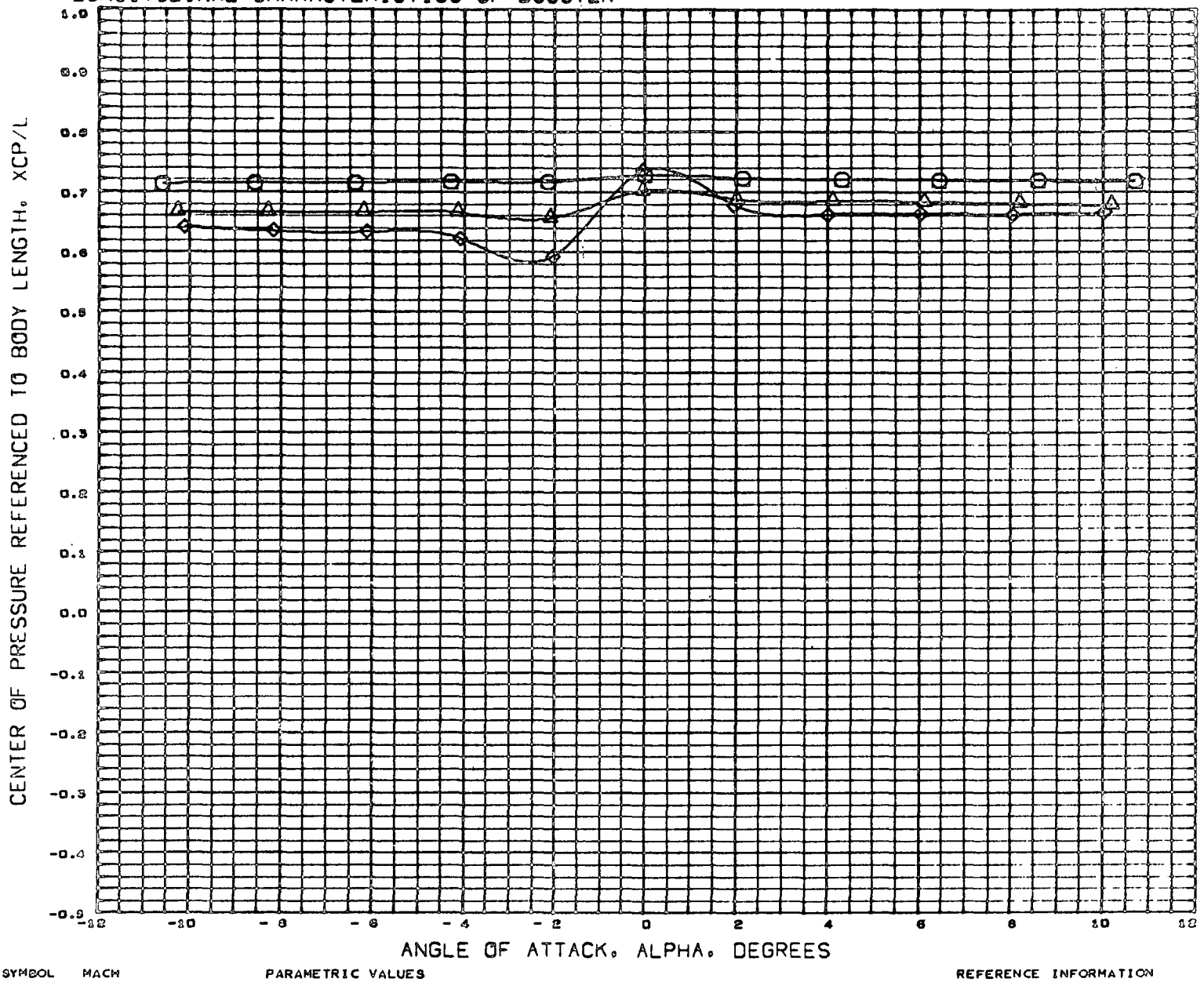
LONGITUDINAL CHARACTERISTICS OF BOOSTER



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.606	BETA	0.000	ELVATR	0.000
△	0.900	AILRON	0.000		
□	0.998				
◇	1.097				
▽	1.197				
◁	1.466	DATA HIST. CODE	*E		

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

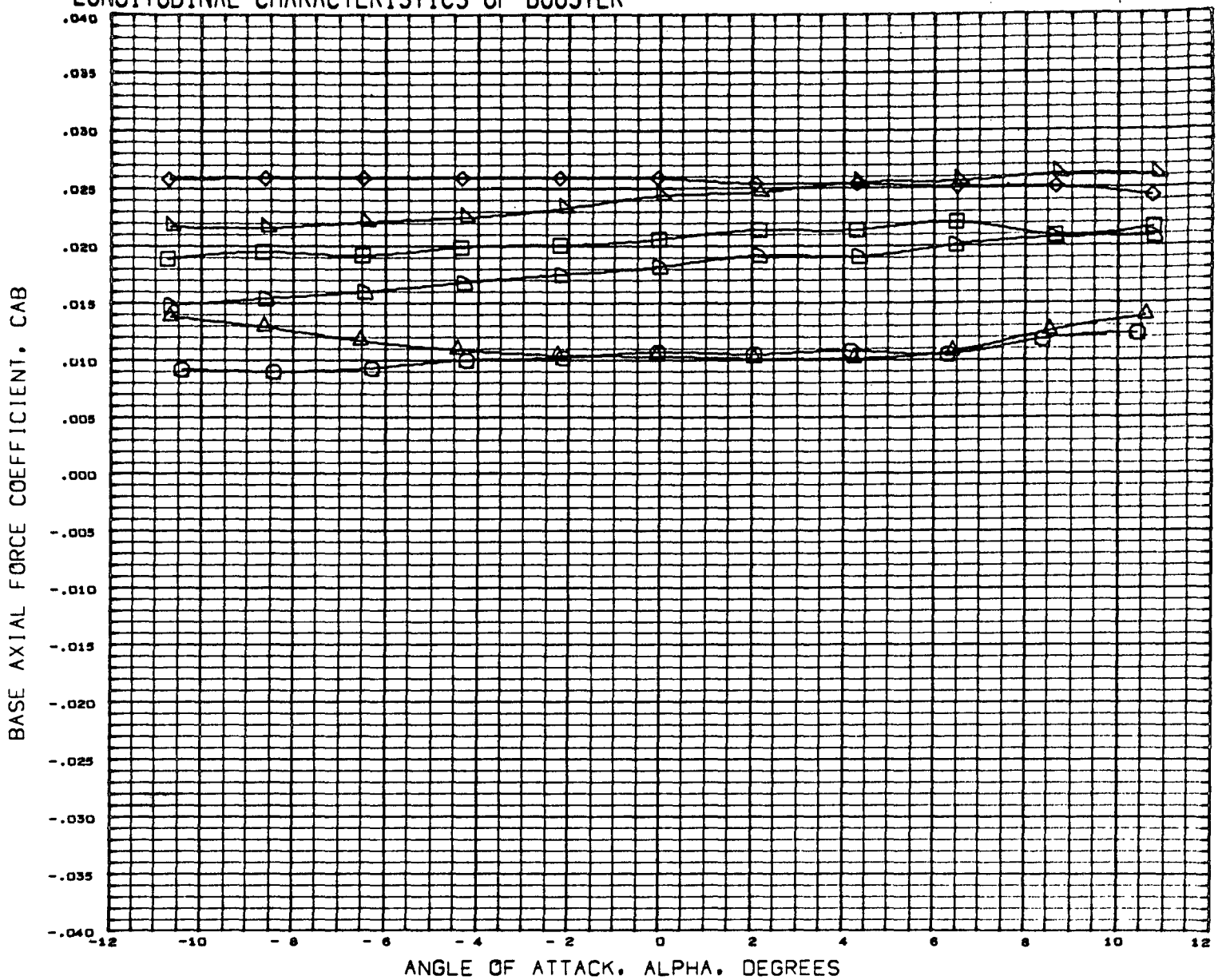


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.950	BETA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.950				

DATA HIST. CODE *E

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

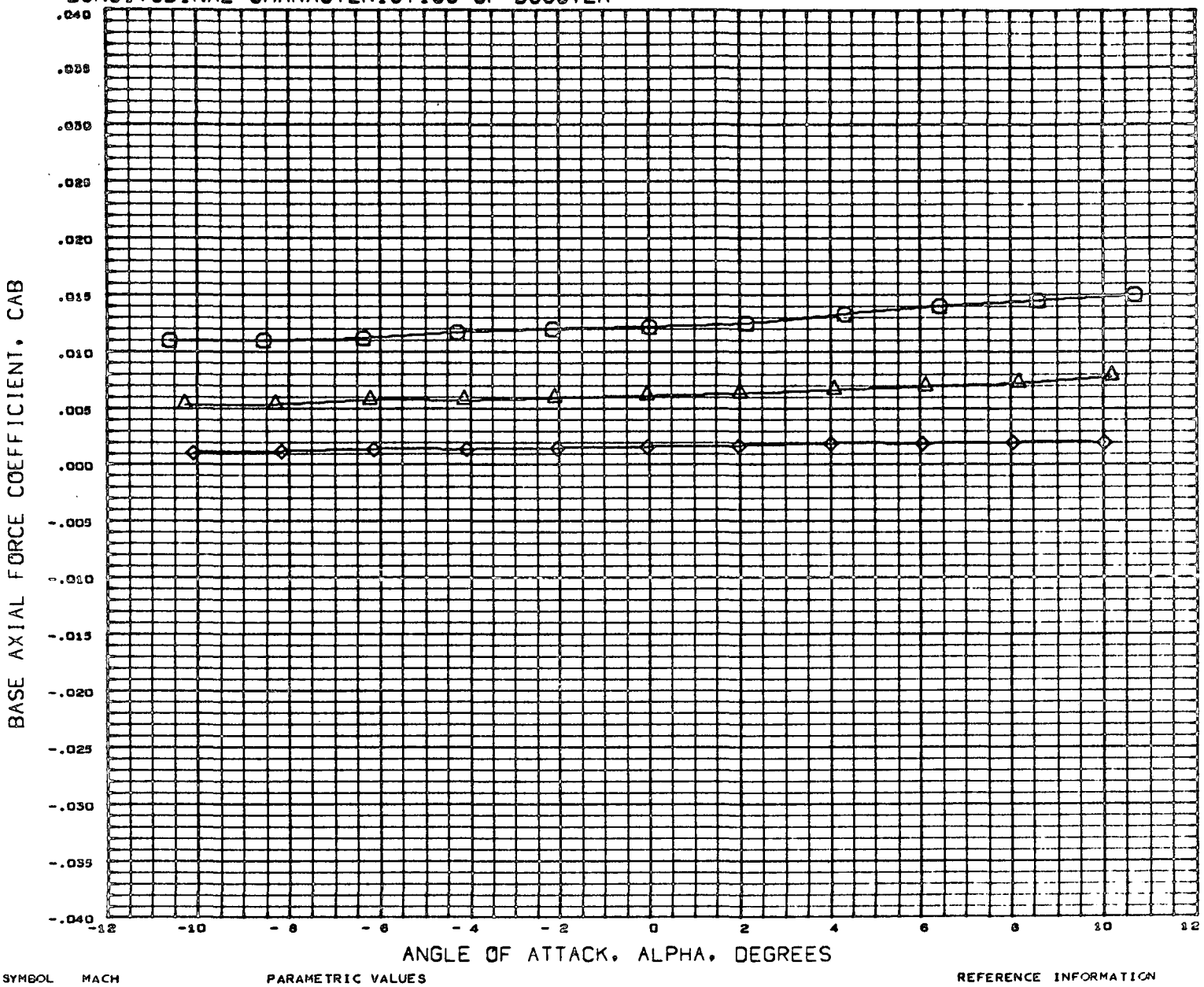
LONGITUDINAL CHARACTERISTICS OF BOOSTER



SYMBOL	MACH	PARAMETRIC VALUES			
	0.606	BETA	0.000	ELVATR	0.000
	0.900	AILRON	0.000		
	0.998				
	1.097				
	1.197				
	1.466	DATA HIST. CODE	*E		

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



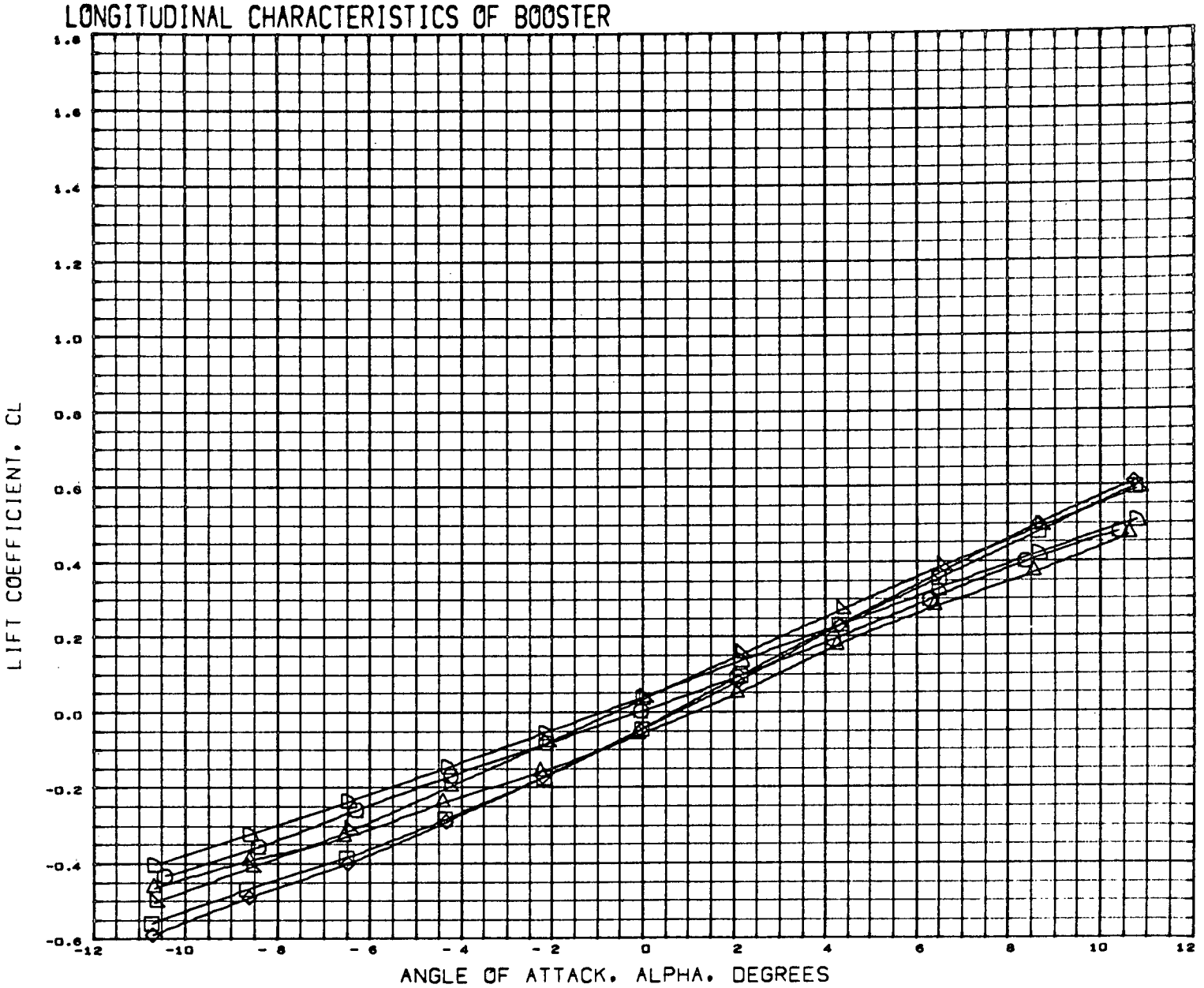
SYMBOL	MACH		PARAMETRIC VALUES		
○	1.999	BETA	0.000	ELVATR	0.000
△	2.090	AILRON	0.000		
◇	4.999				

DATA HIST. CODE *E

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

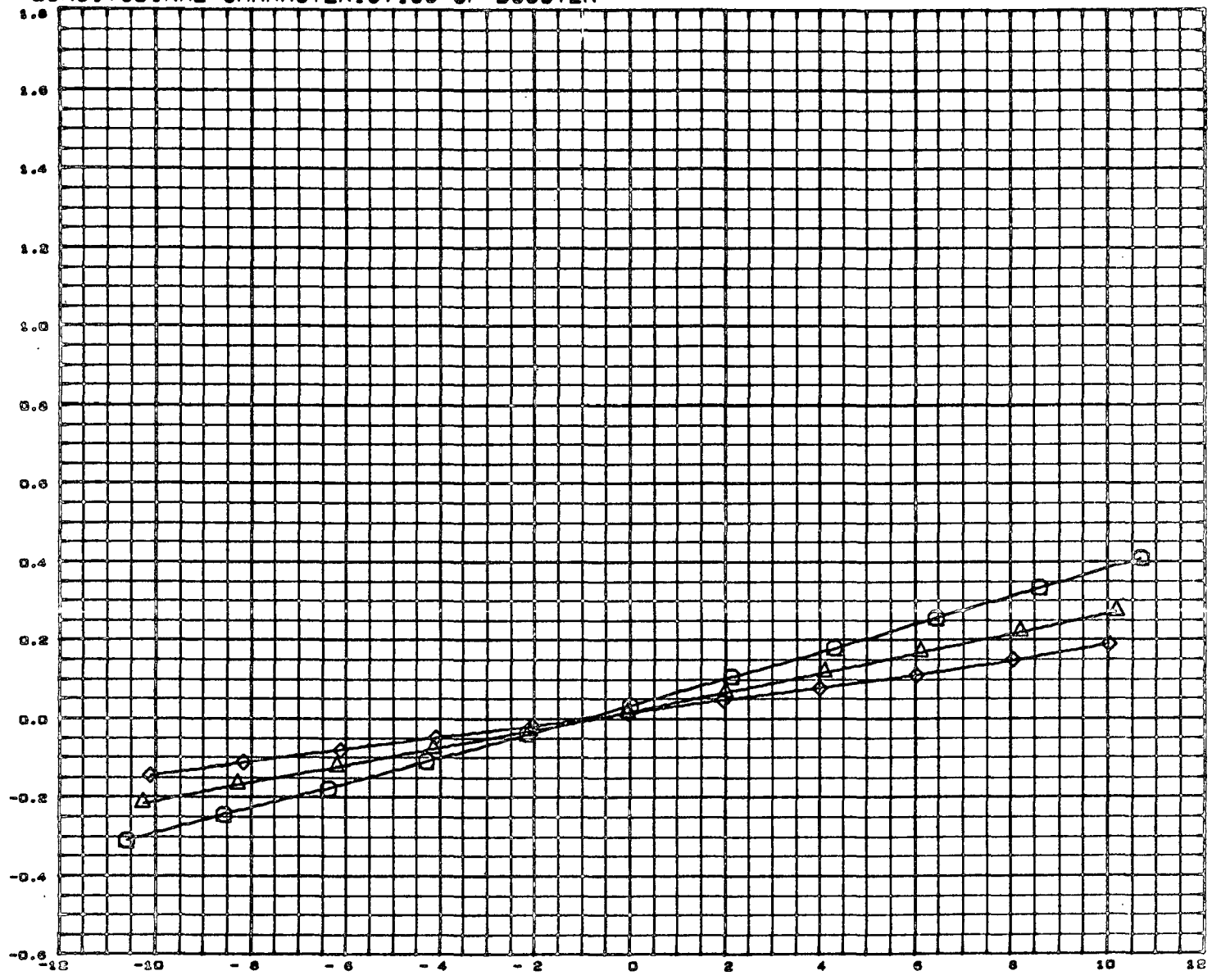
LONGITUDINAL CHARACTERISTICS OF BOOSTER



SYMBOL	MACH		PARAMETRIC VALUES		
○	0.606	BETA	0.000	ELVATR	0.000
△	0.900	AILRON	0.000		
◇	0.998				
□	1.097				
◸	1.197				
▽	1.466	DATA HIST. CODE	*E		

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

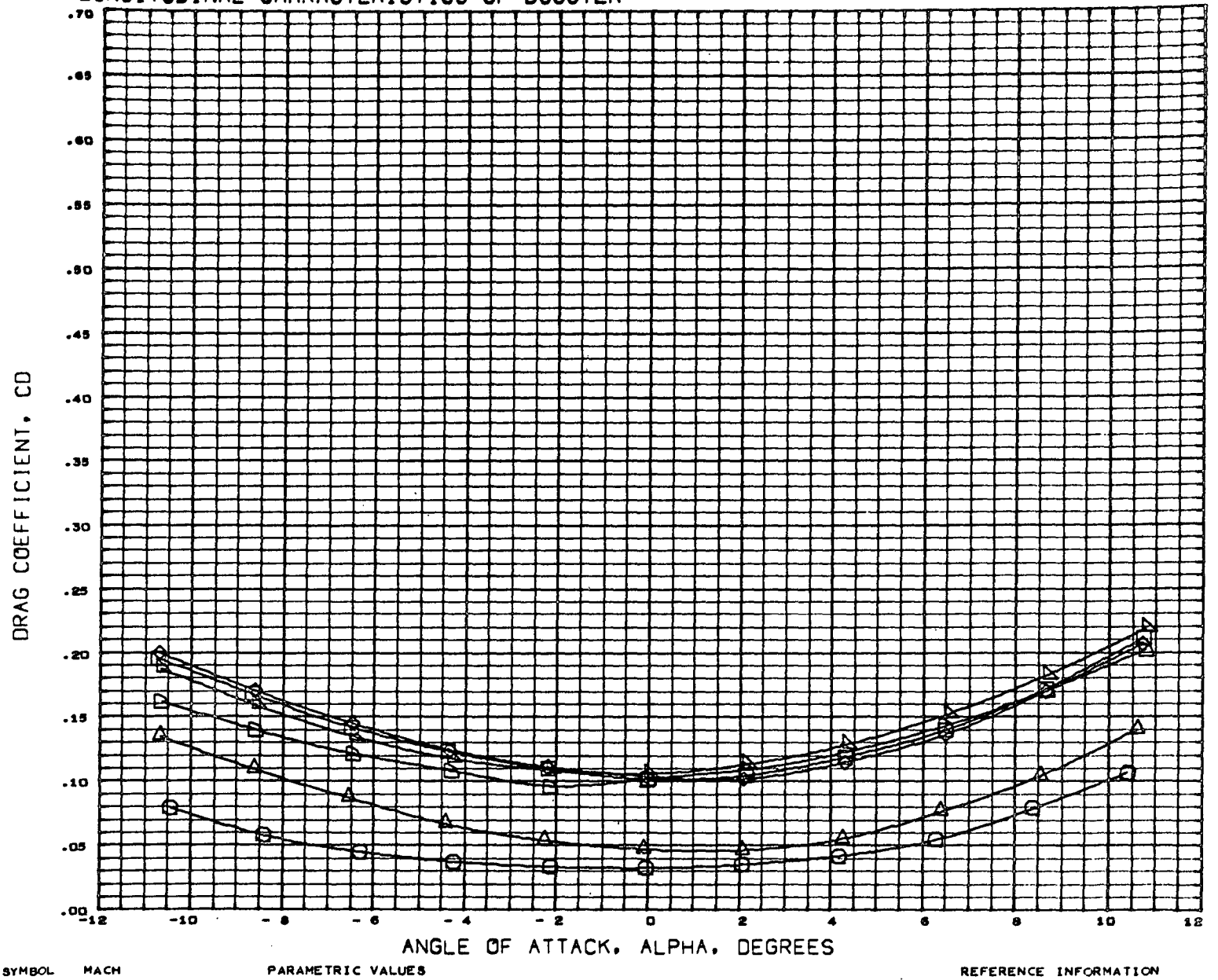


SYMBOL	MACH		PARAMETRIC VALUES		
○	1.959	BETA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.998				

DATA HIST. CODE *E

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

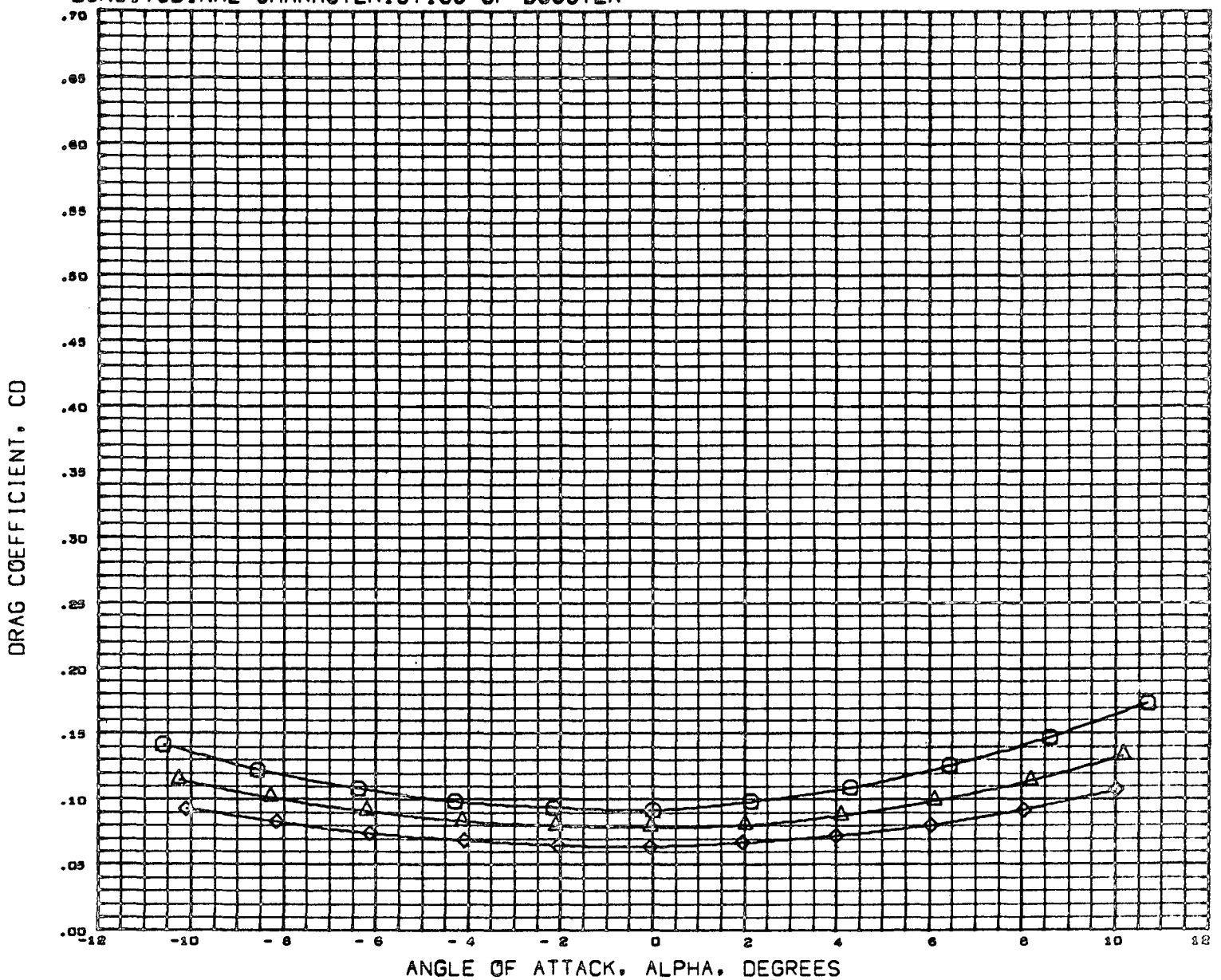


SYMBOL	MACH	PARAMETRIC VALUES			
○	0.606	BETA	0.000	ELVATR	0.000
△	0.900	AILRON	0.000		
◇	0.996				
□	1.097				
▽	1.197				
⬡	1.466	DATA HIST. CODE	*E		

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

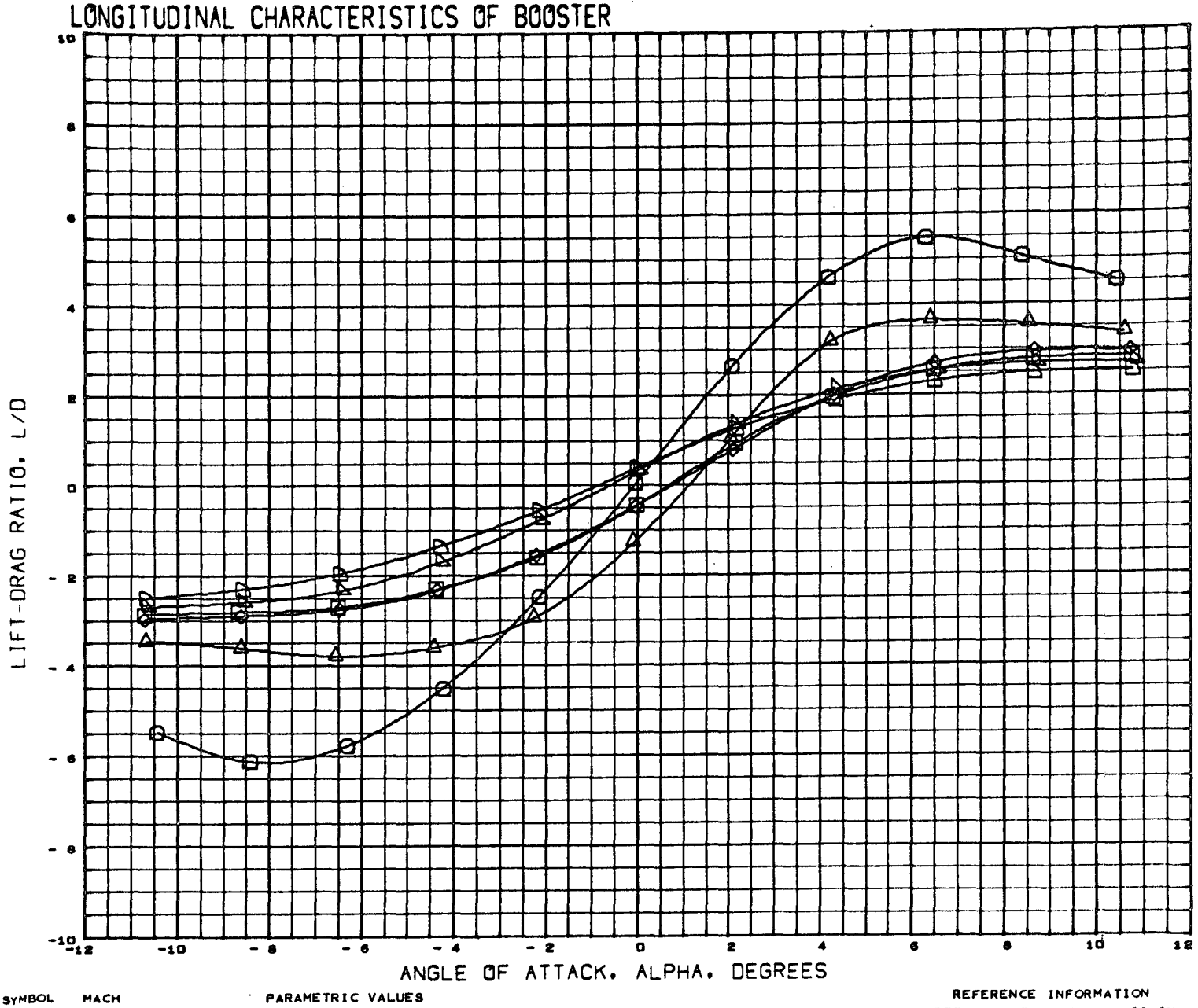


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.959	BETA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.959				

DATA HIST. CODE *E

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

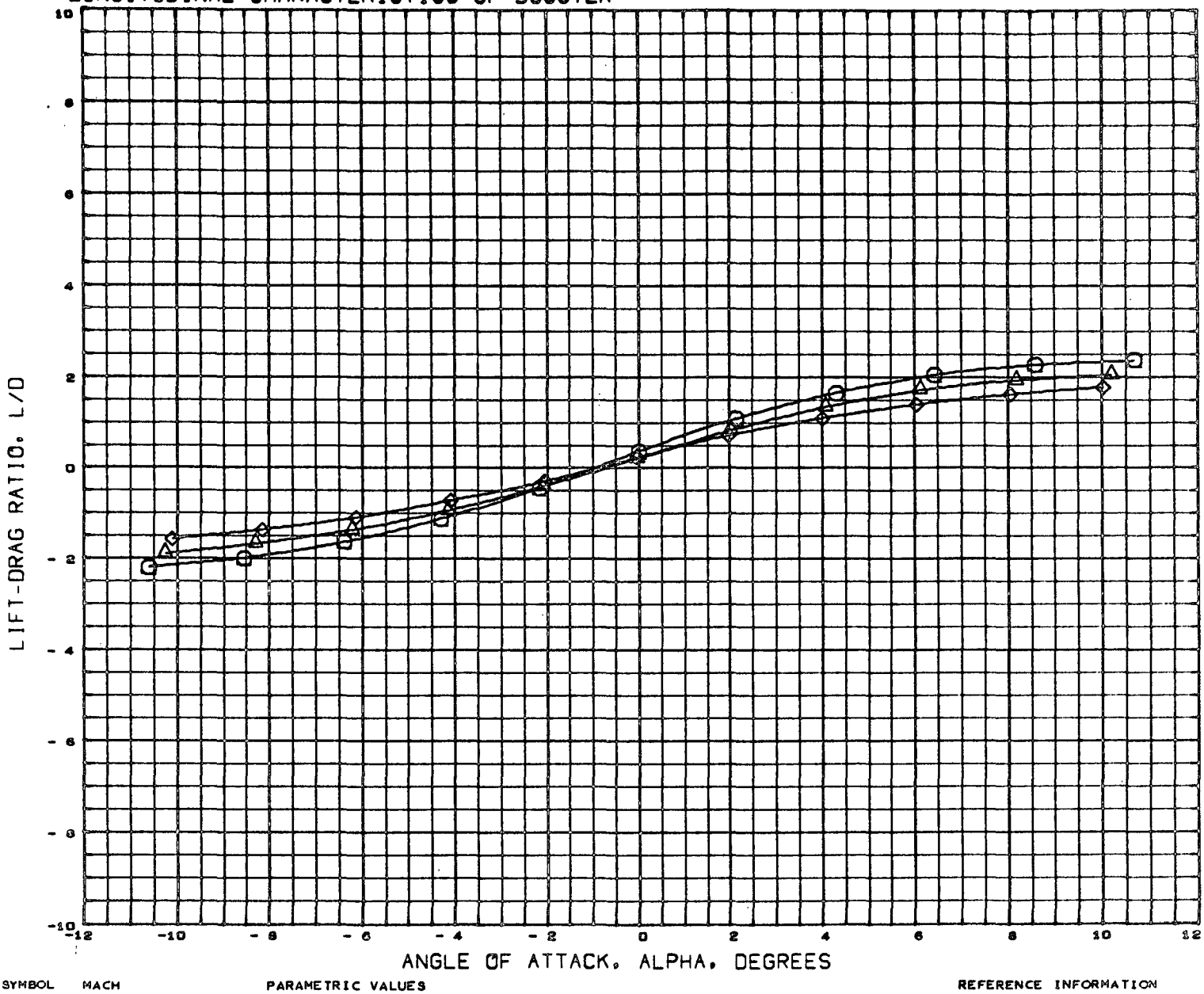
LONGITUDINAL CHARACTERISTICS OF BOOSTER



SYMBOL	MACH	PARAMETRIC VALUES			
○	0.606	BETA	0.000	ELVATR	0.000
△	0.900	AILRON	0.000		
◇	0.998				
□	1.097				
▽	1.197				
D	1.466	DATA HIST. CODE	*E		

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

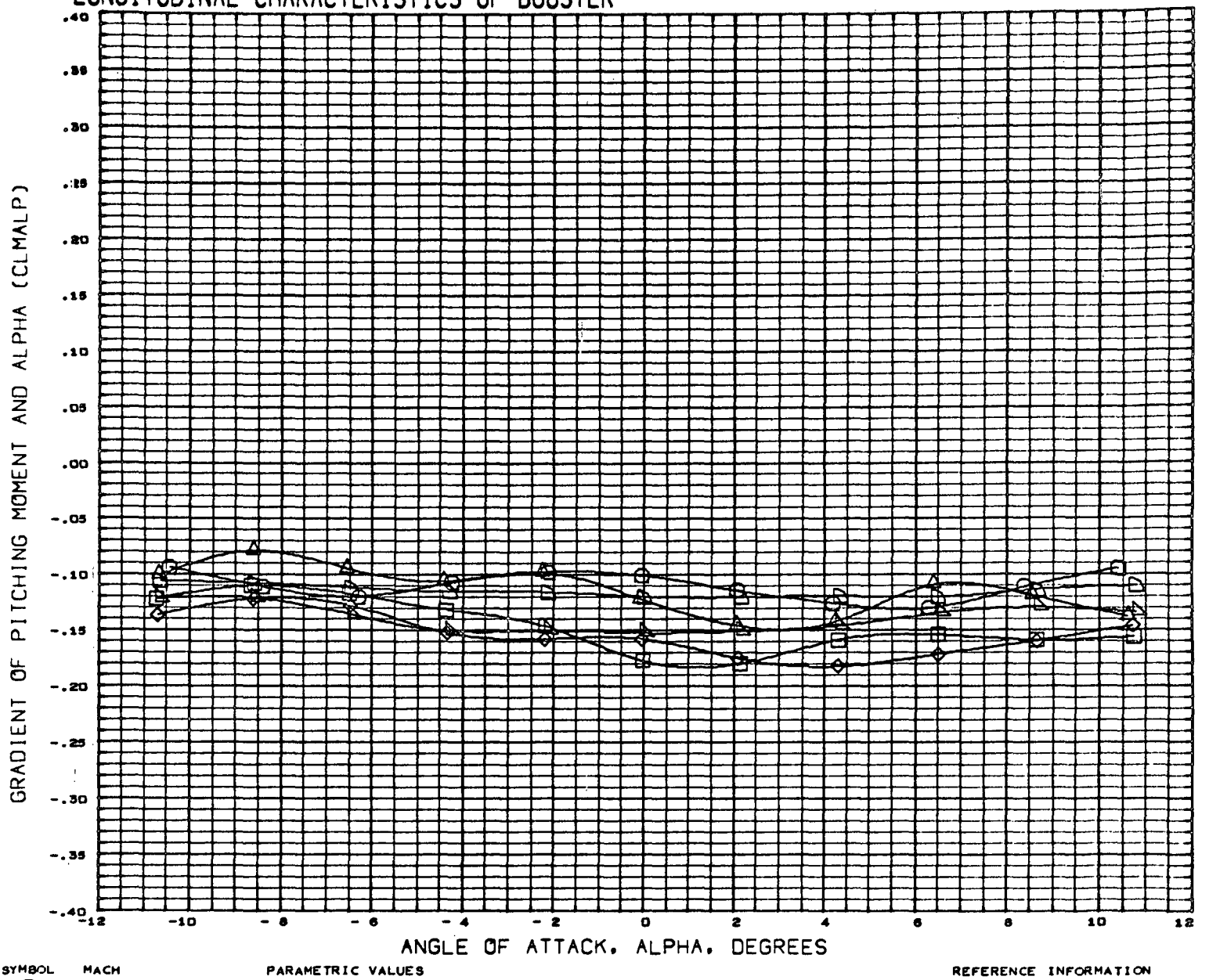


SYMBOL	MACH	PARAMETRIC VALUES			
○	1.959	BETA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.959				

DATA HIST. CODE *E

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0890	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

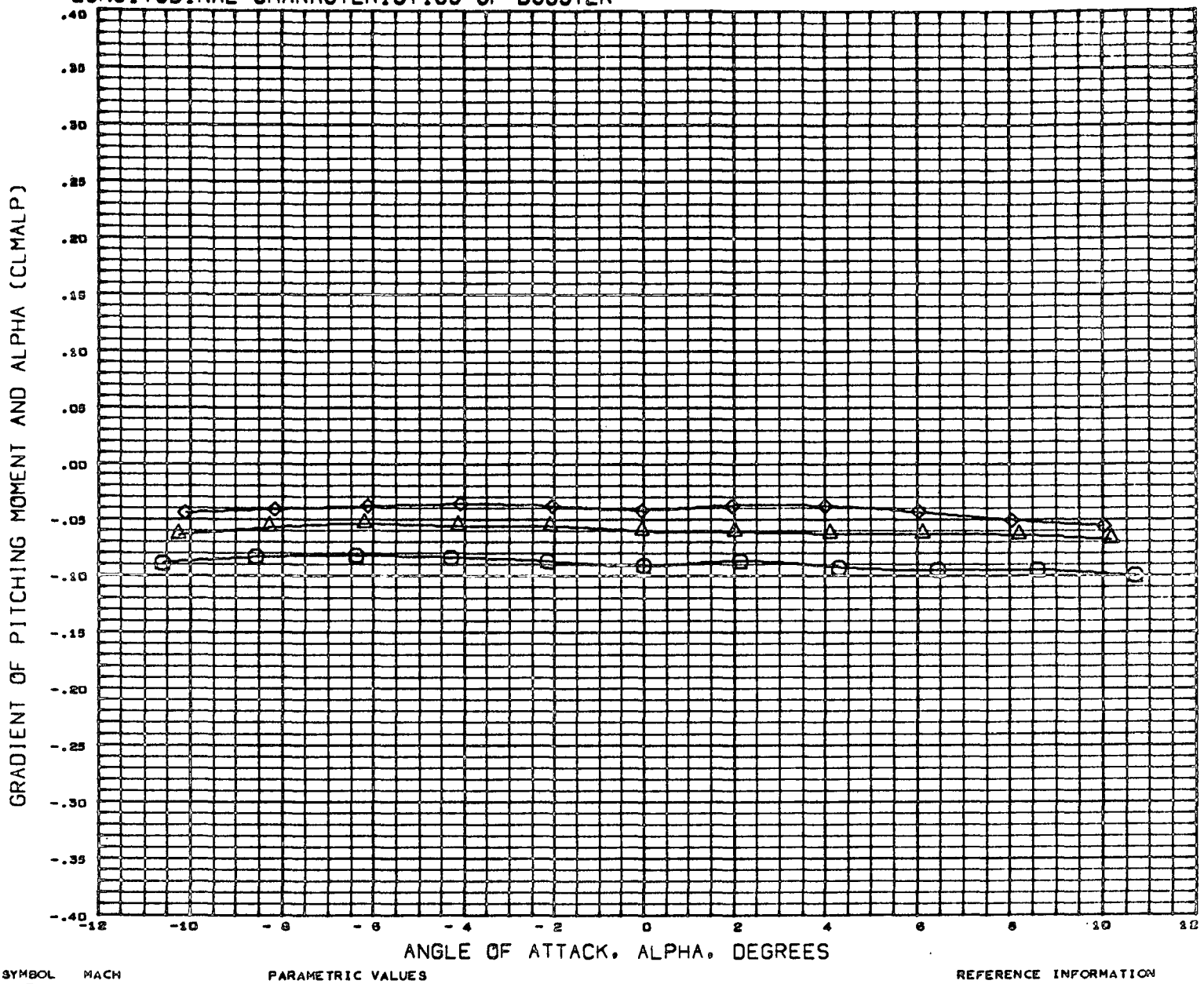
LONGITUDINAL CHARACTERISTICS OF BOOSTER



SYMBOL	MACH	PARAMETRIC VALUES			
	0.606	BETA	0.000	ELVATR	0.000
	0.900	AILRON	0.000		
	0.998				
	1.097				
	1.197				
	1.466	DATA HIST. CODE	G		

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



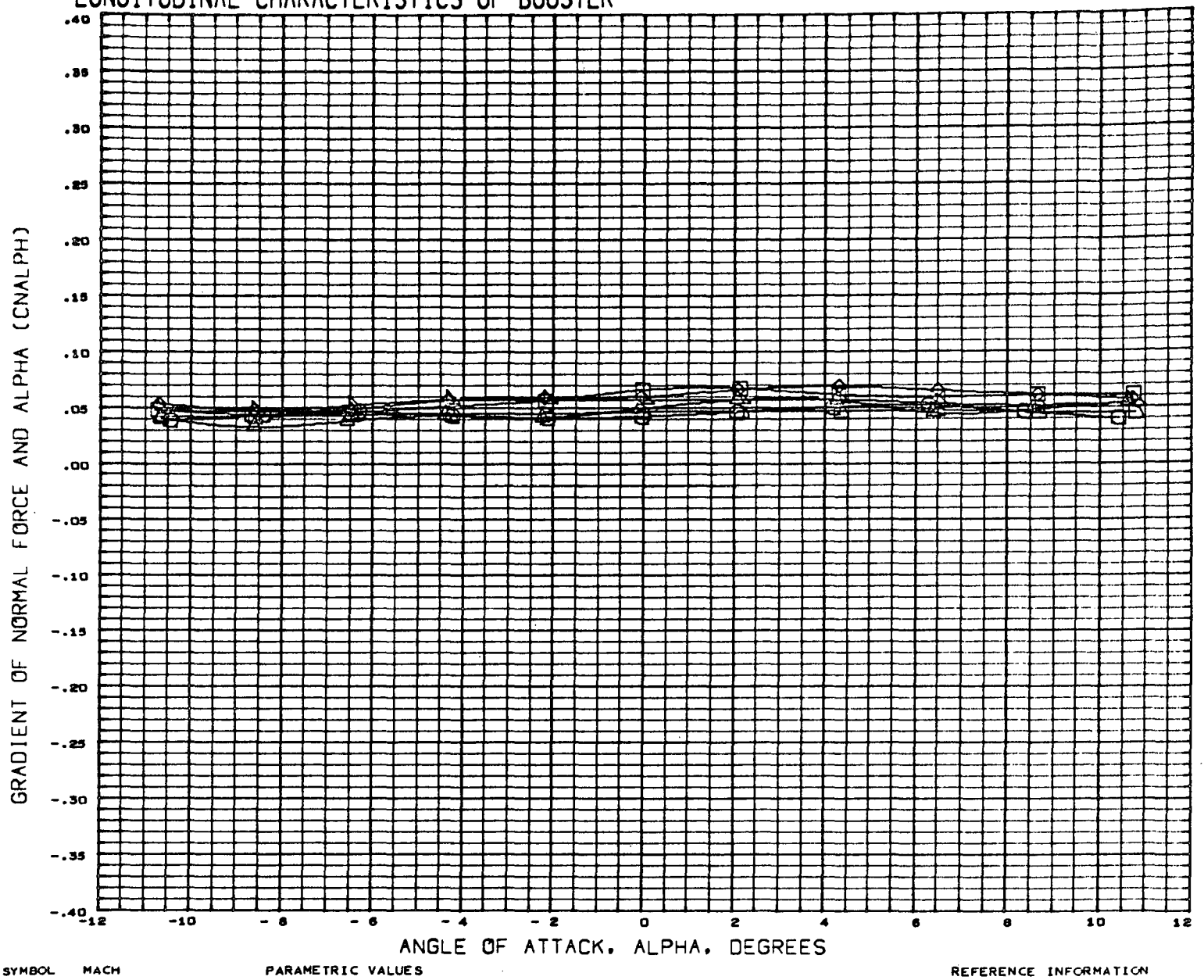
SYMBOL	MACH		PARAMETRIC VALUES		
○	1.959	BETA	0.000	ELVATR	0.000
△	2.890	AILRON	0.000		
◇	4.959				

DATA HIST. CODE G

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

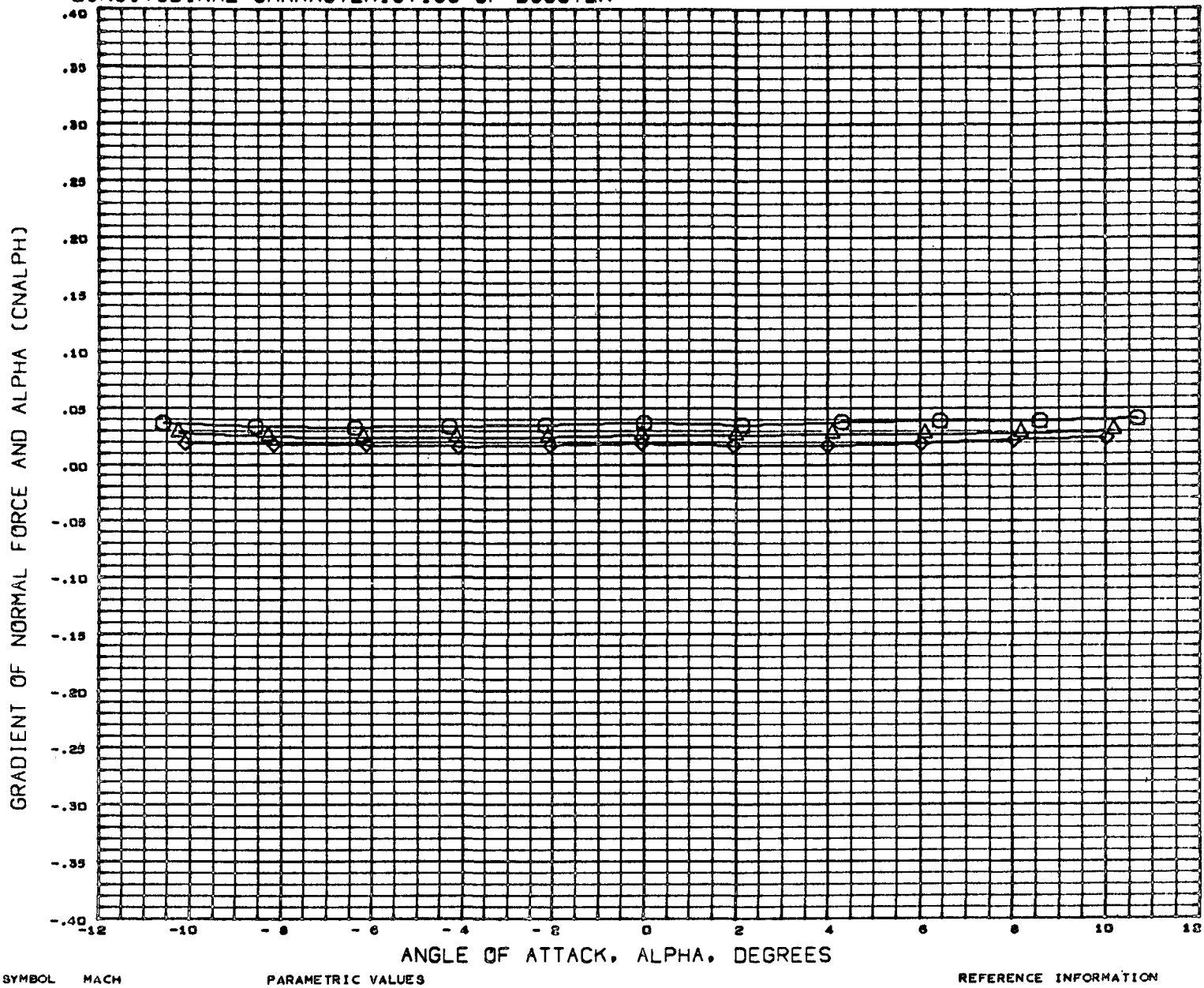
LONGITUDINAL CHARACTERISTICS OF BOOSTER



SYMBOL	MACH	PARAMETRIC VALUES			
	0.606	BETA	0.000	ELVATR	0.000
	0.900	AILRON	0.000		
	0.998				
	1.097				
	1.197				
	1.466	DATA HIST. CODE	G		

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



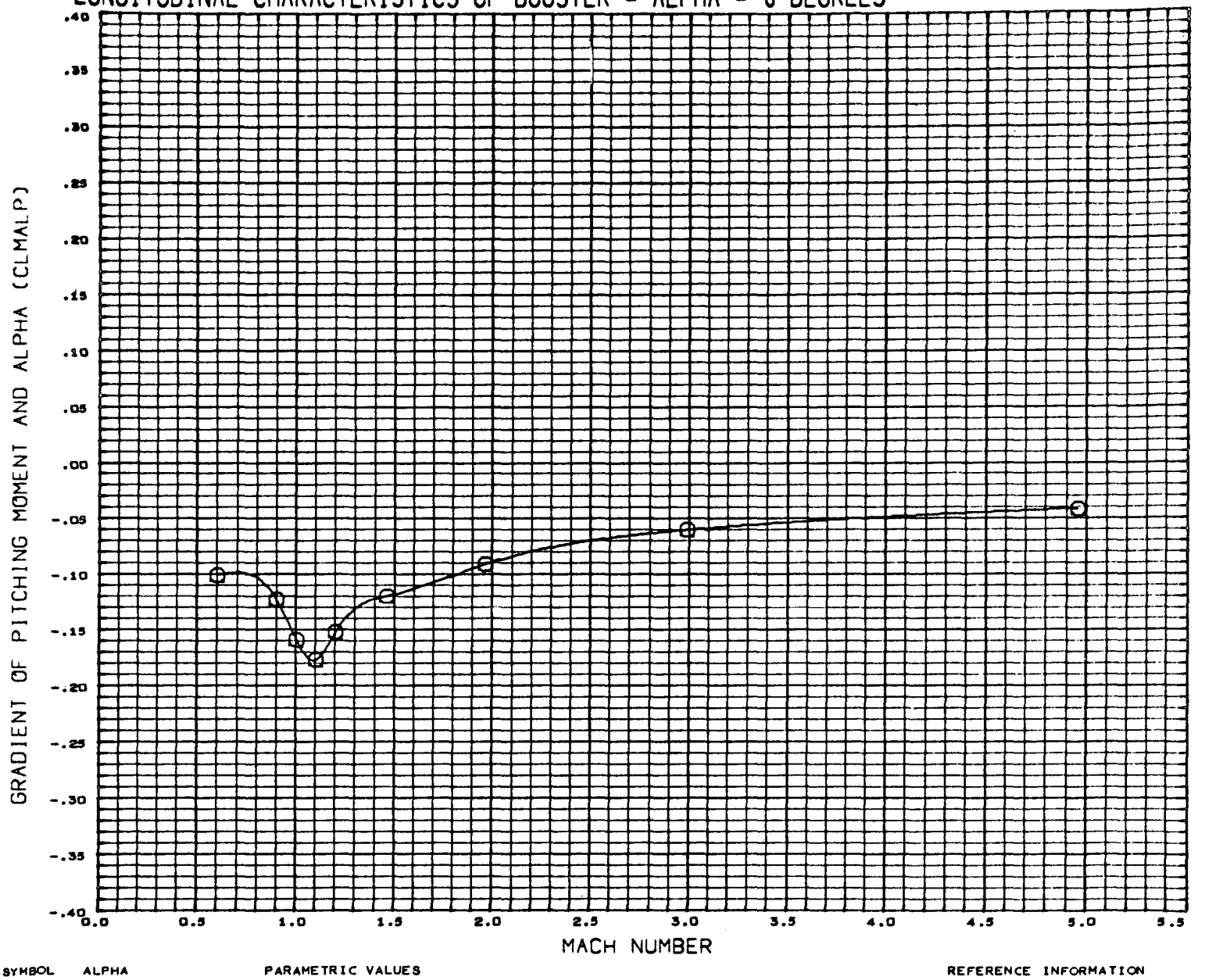
SYMBOL	MACH		PARAMETRIC VALUES		
○	1.959	BETA	0.000	ELVATR	0.000
△	2.990	AILRON	0.000		
◇	4.959				

DATA HIST. CODE G

REFERENCE INFORMATION

SREF	19.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER - ALPHA = 0 DEGREES

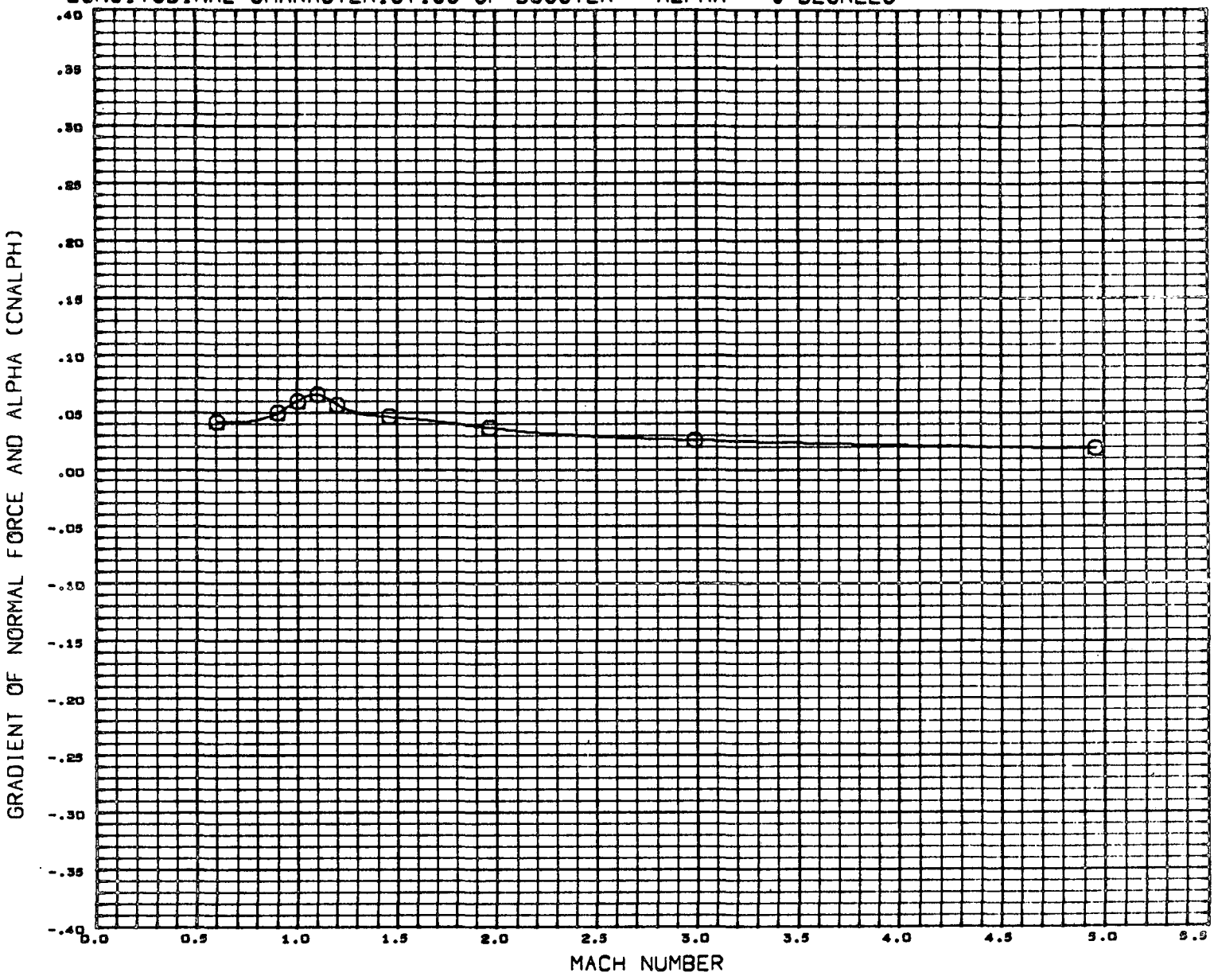


SYMBOL	ALPHA	PARAMETRIC VALUES			
O	0.000	BETA	0.000	ELVATR	0.000
		AILRON	0.000		

DATA HIST. CODE GI

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER - ALPHA = 0 DEGREES



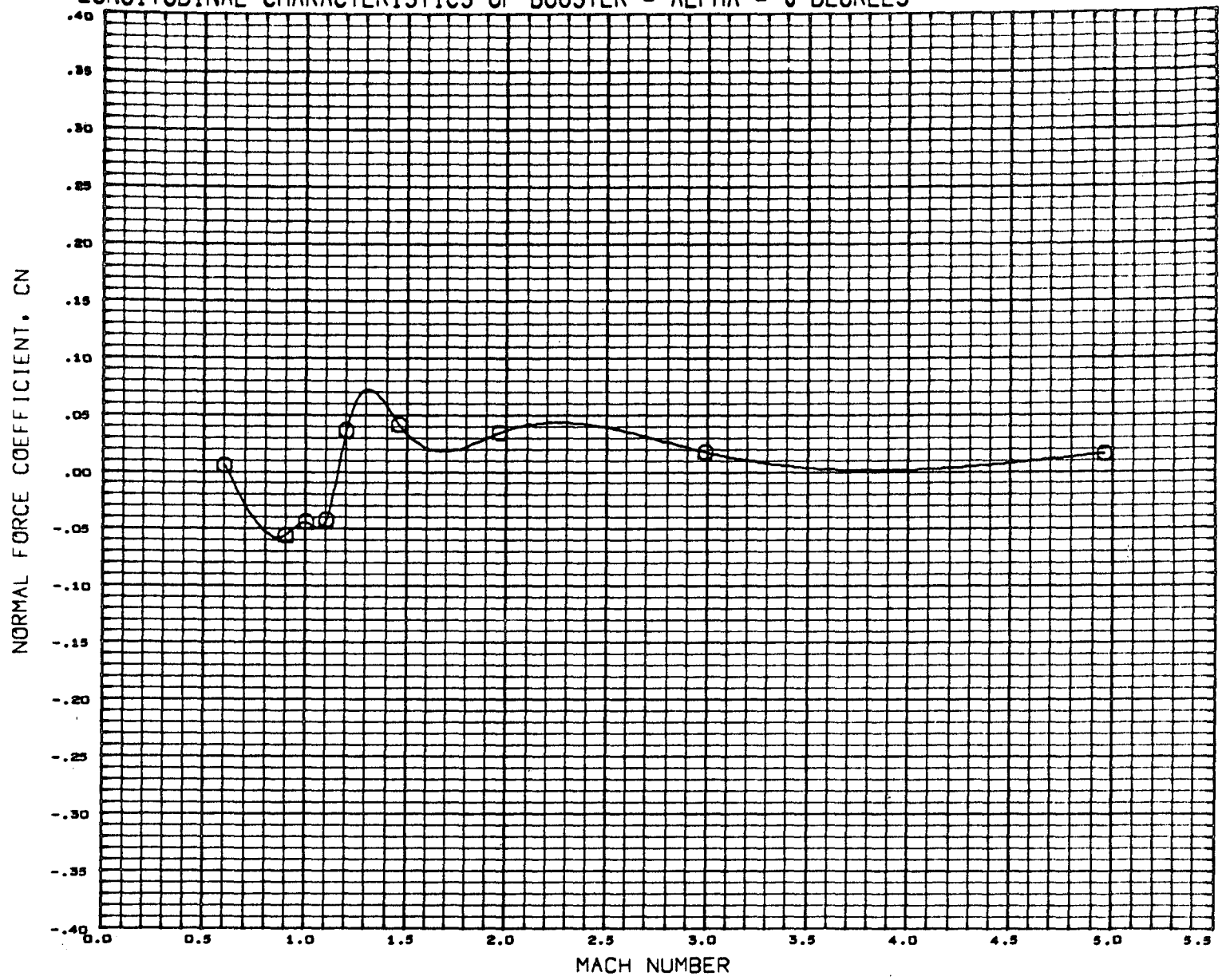
SYMBOL	ALPHA	PARAMETRIC VALUES			
O	0.000	BETA	0.000	ELVATR	0.000
		AILRON	0.000		

DATA HIST. CODE GI

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER - ALPHA = 0 DEGREES



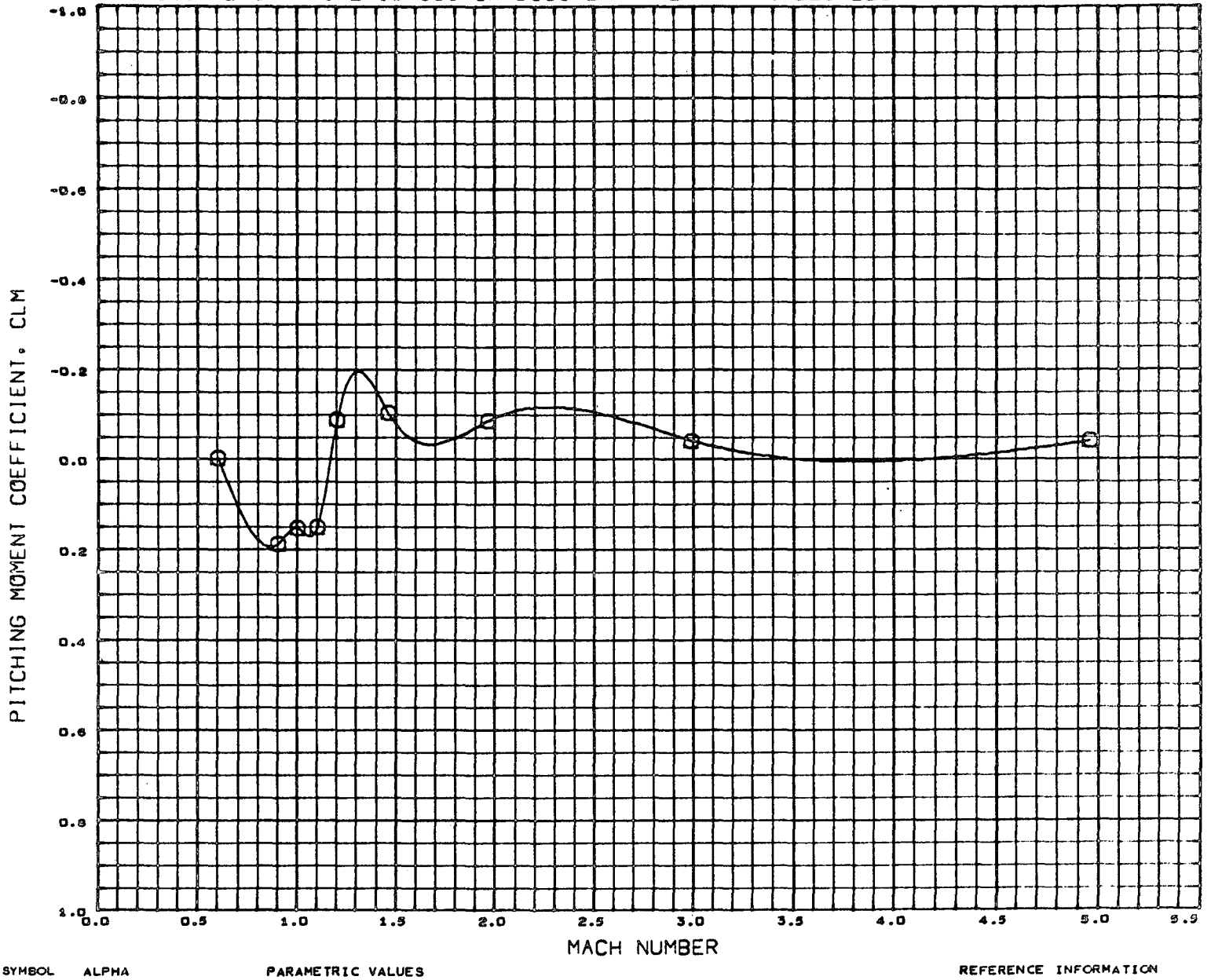
SYMBOL	ALPHA	PARAMETRIC VALUES			
O	0.000	BETA	0.000	ELVATR	0.000
		AILRON	0.000		

DATA HIST. CODE I

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER - ALPHA = 0 DEGREES



SYMBOL	ALPHA	PARAMETRIC VALUES			
O	0.000	BETA	0.000	ELVATR	0.000
		AILRON	0.000		

DATA HIST. CODE I

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER - ALPHA = 0 DEGREES

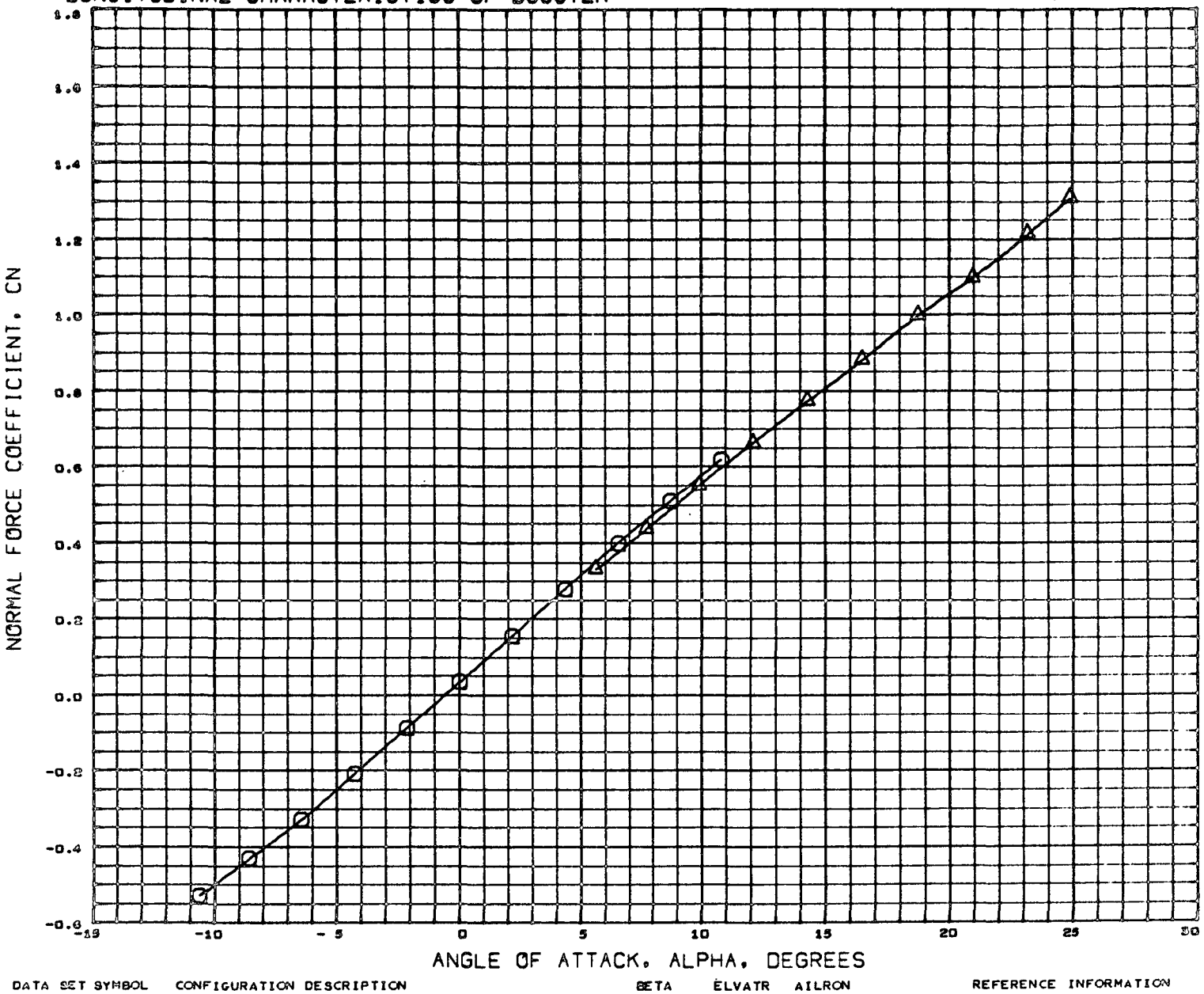
SYMBOL	ALPHA	PARAMETRIC VALUES			
O	0.000	BETA	0.000	ELVATR	0.000
		AILRON	0.000		

DATA HIST. CODE I

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

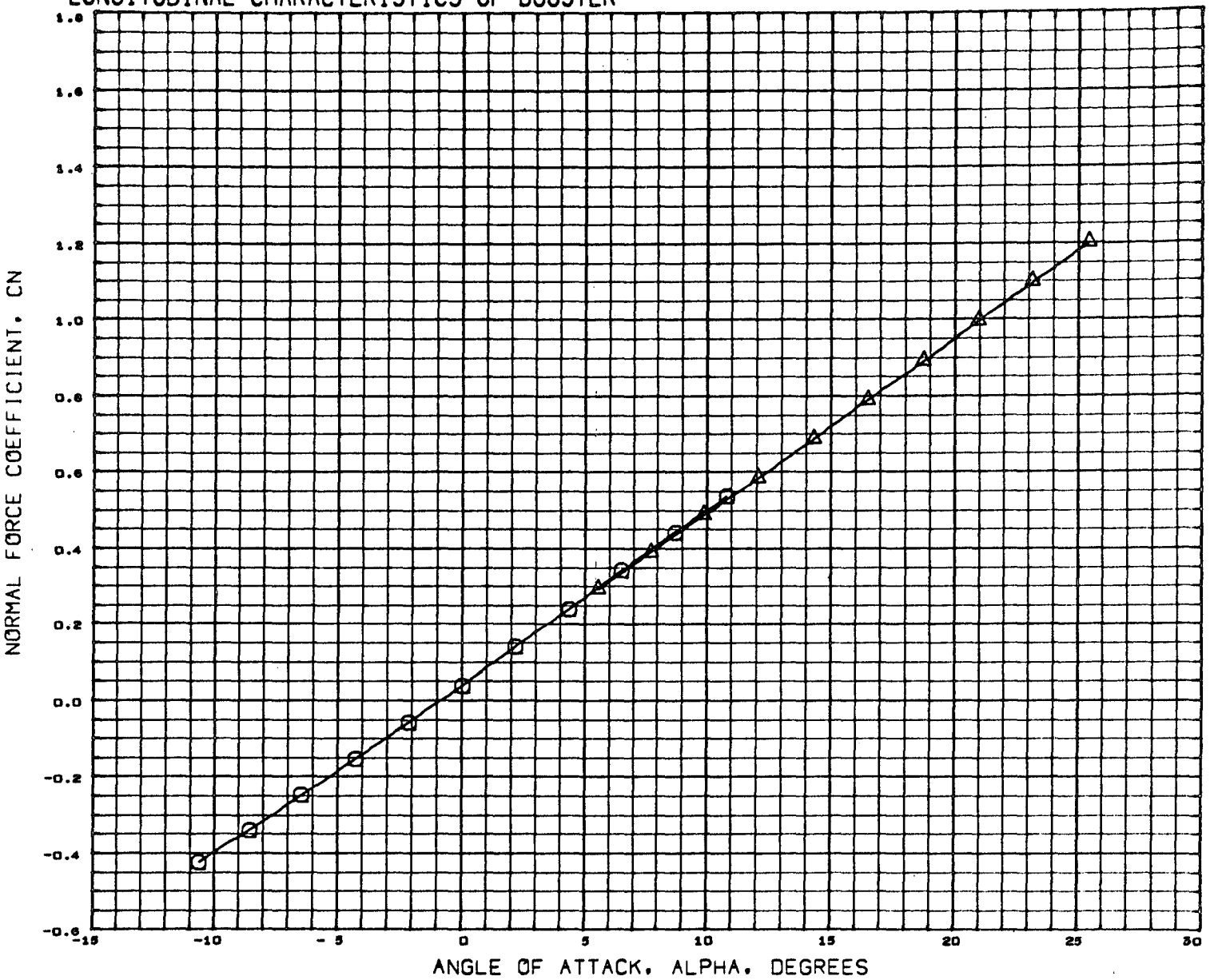


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3209B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

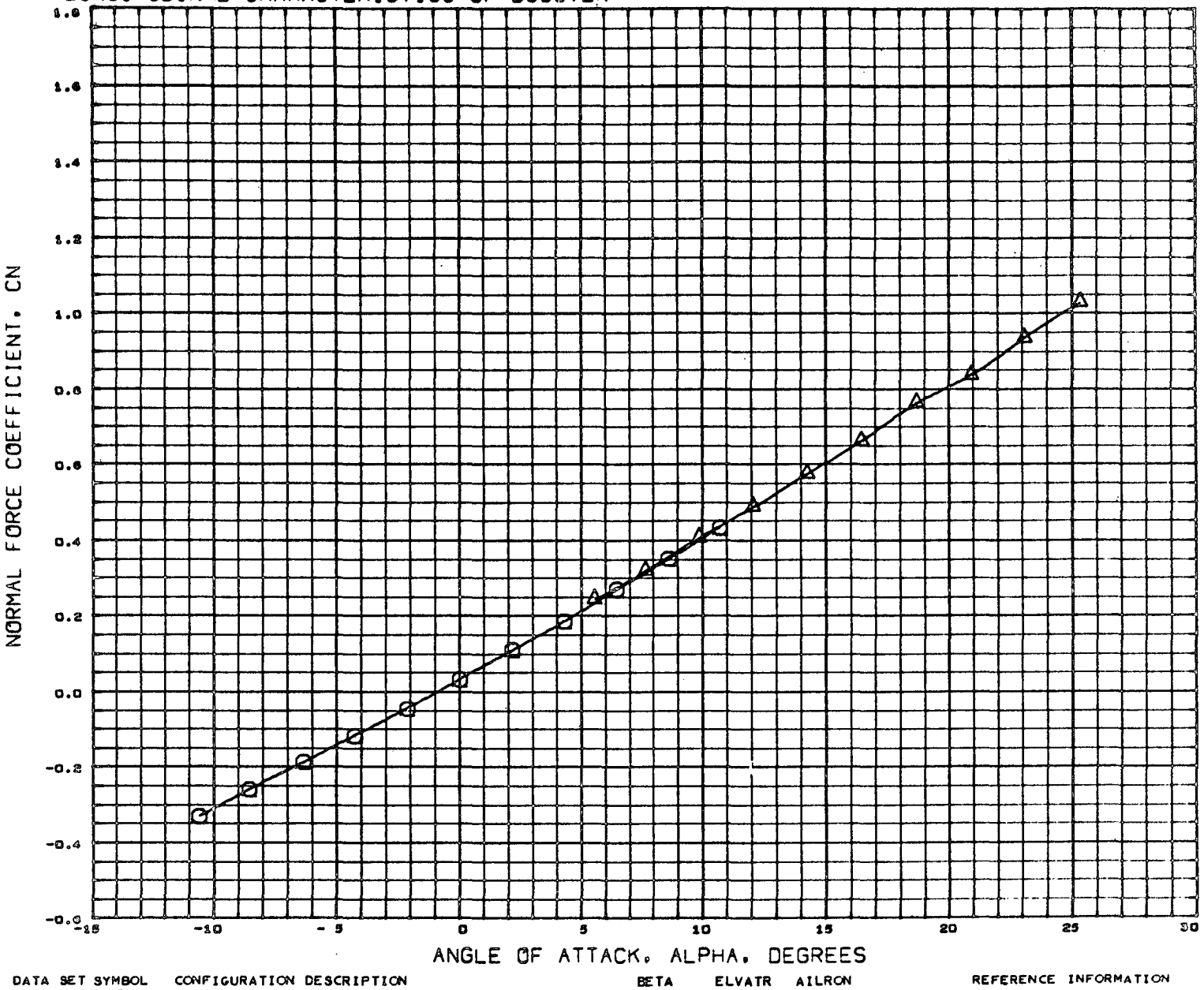


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

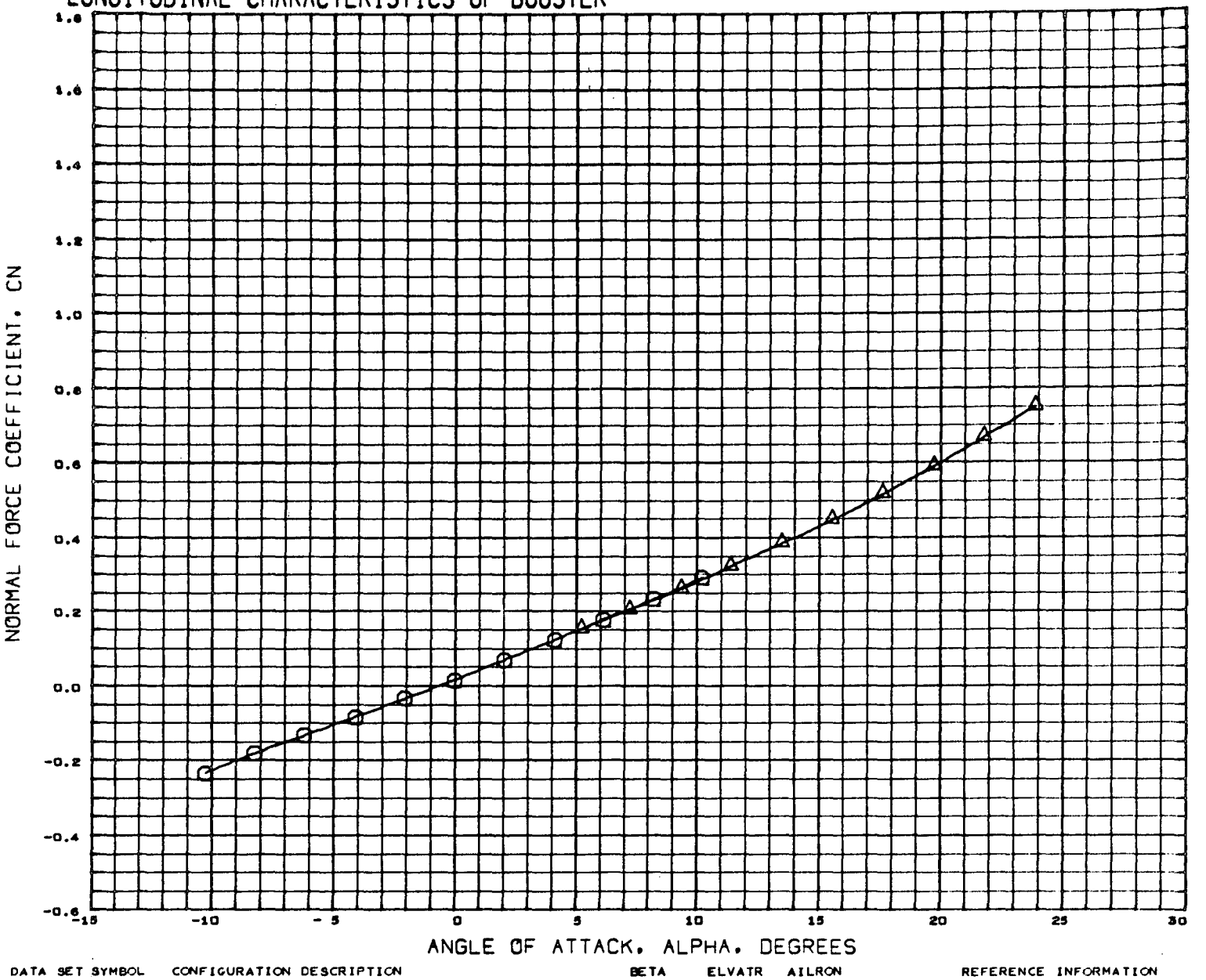


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3209B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

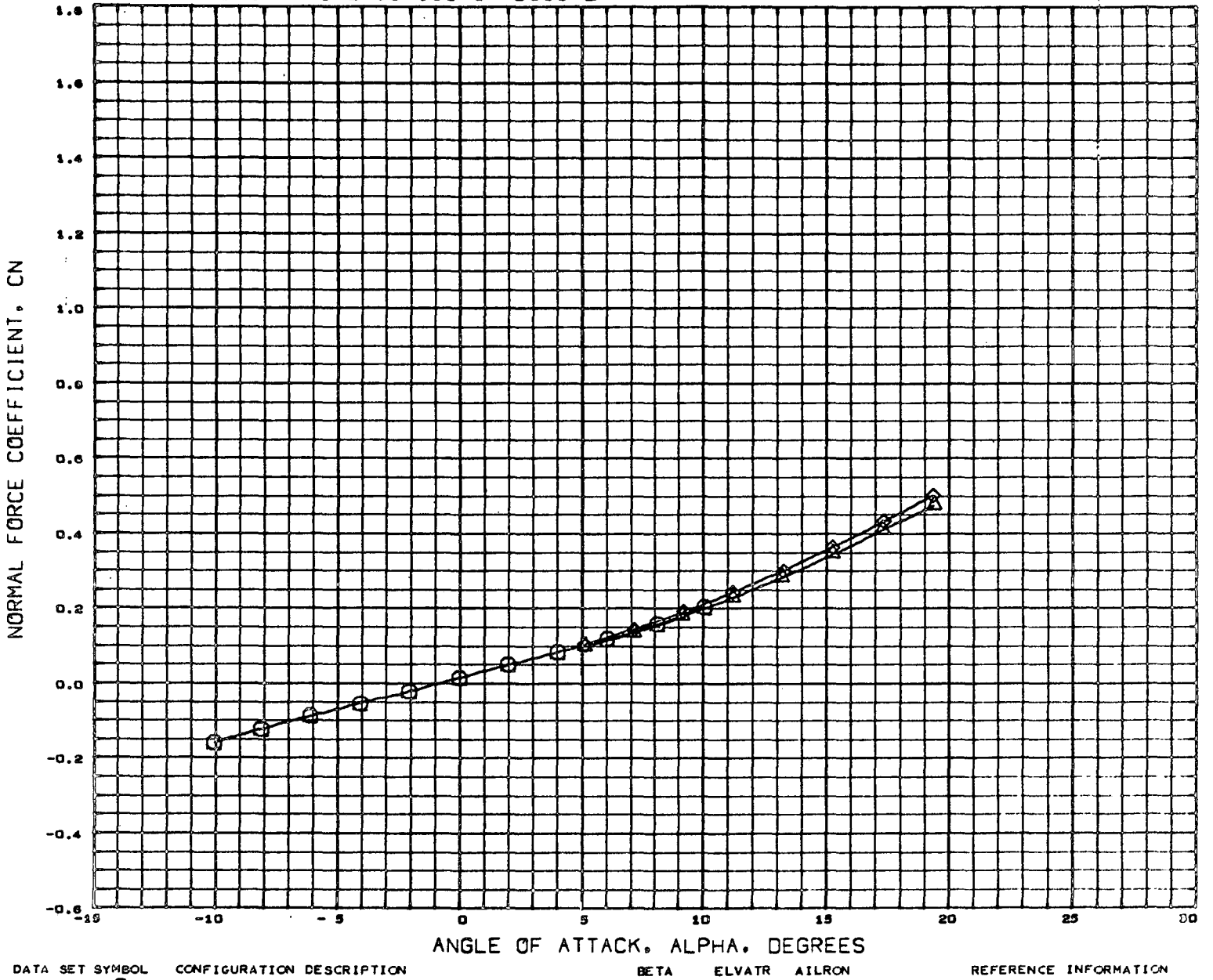


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

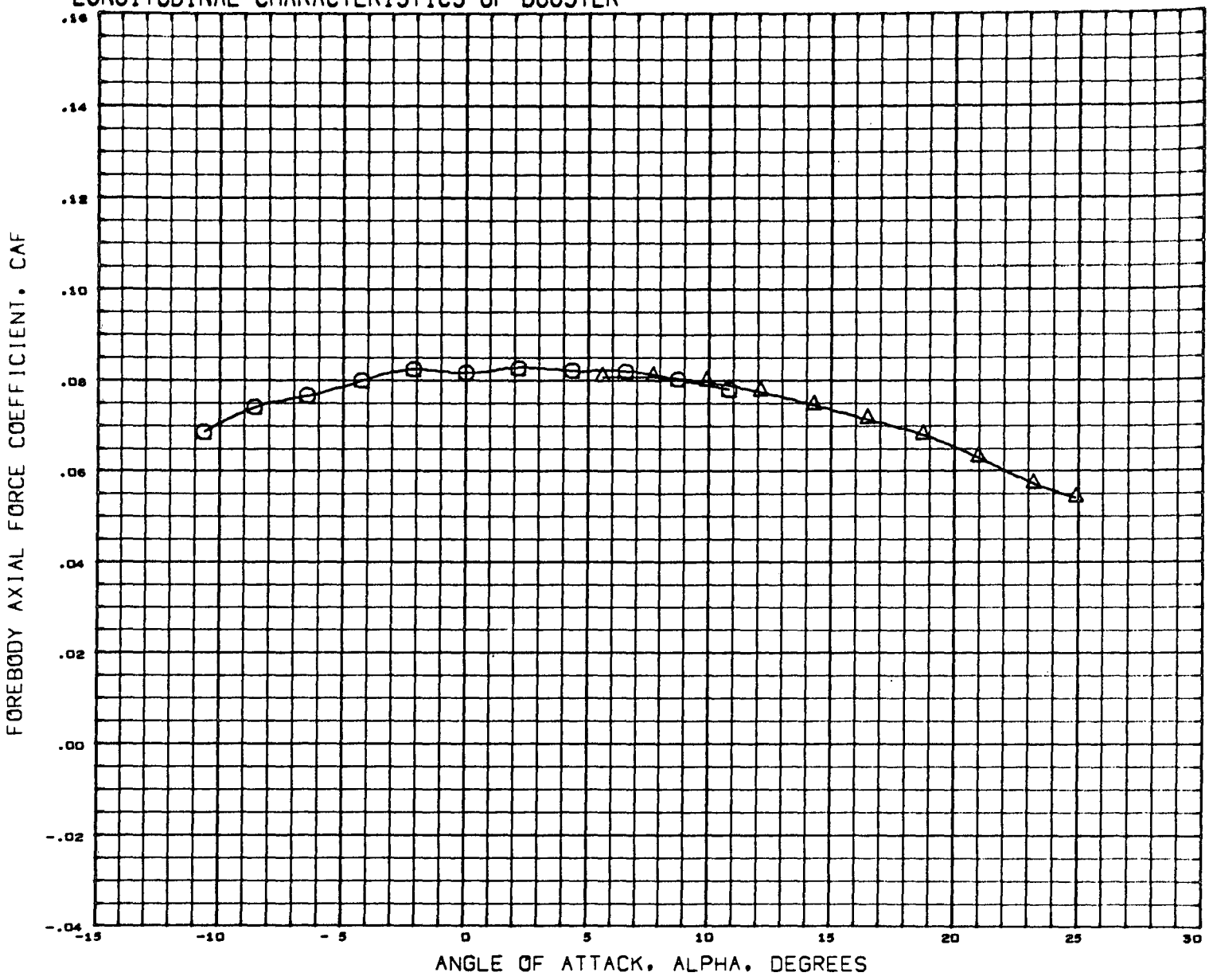


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	10.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

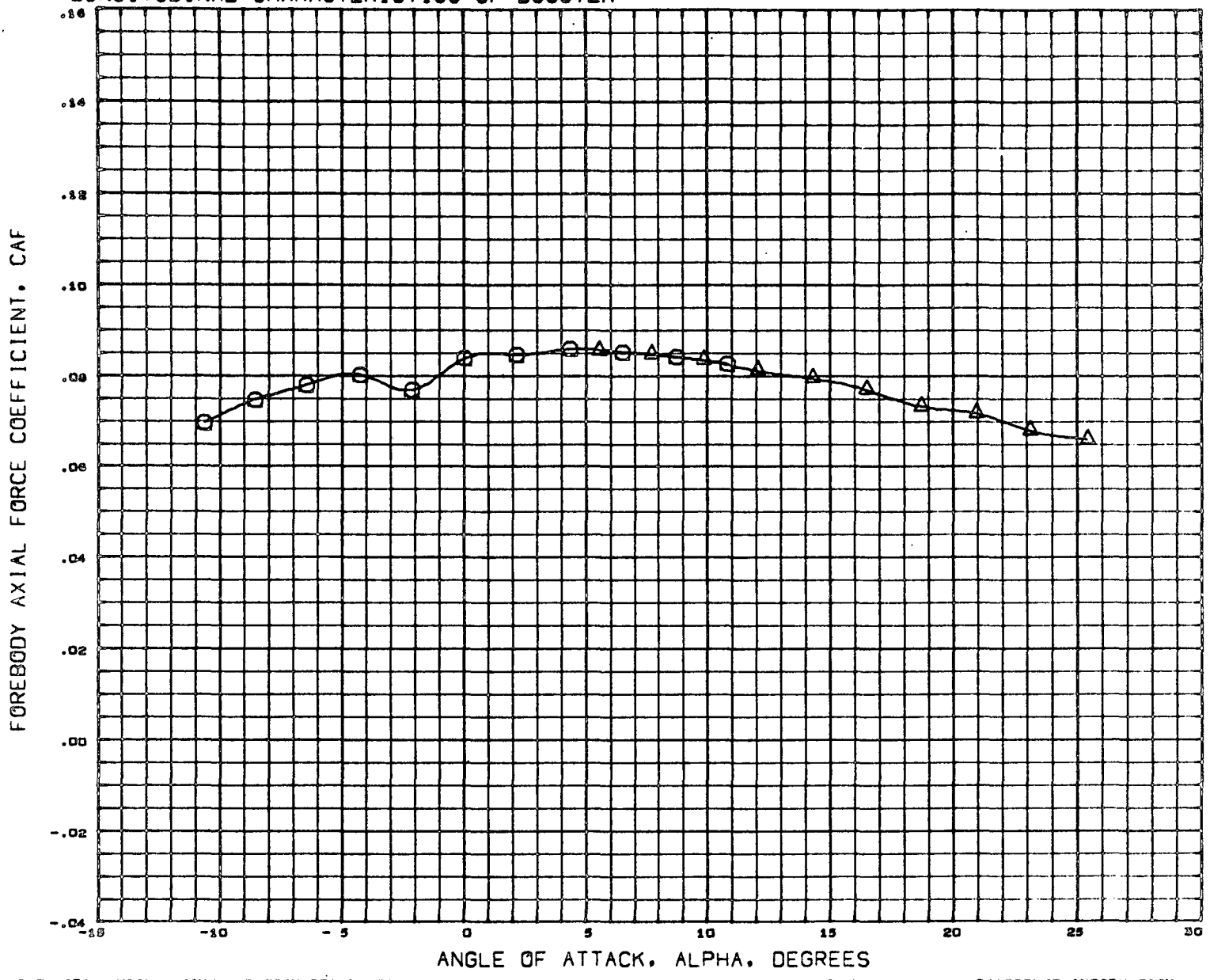


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

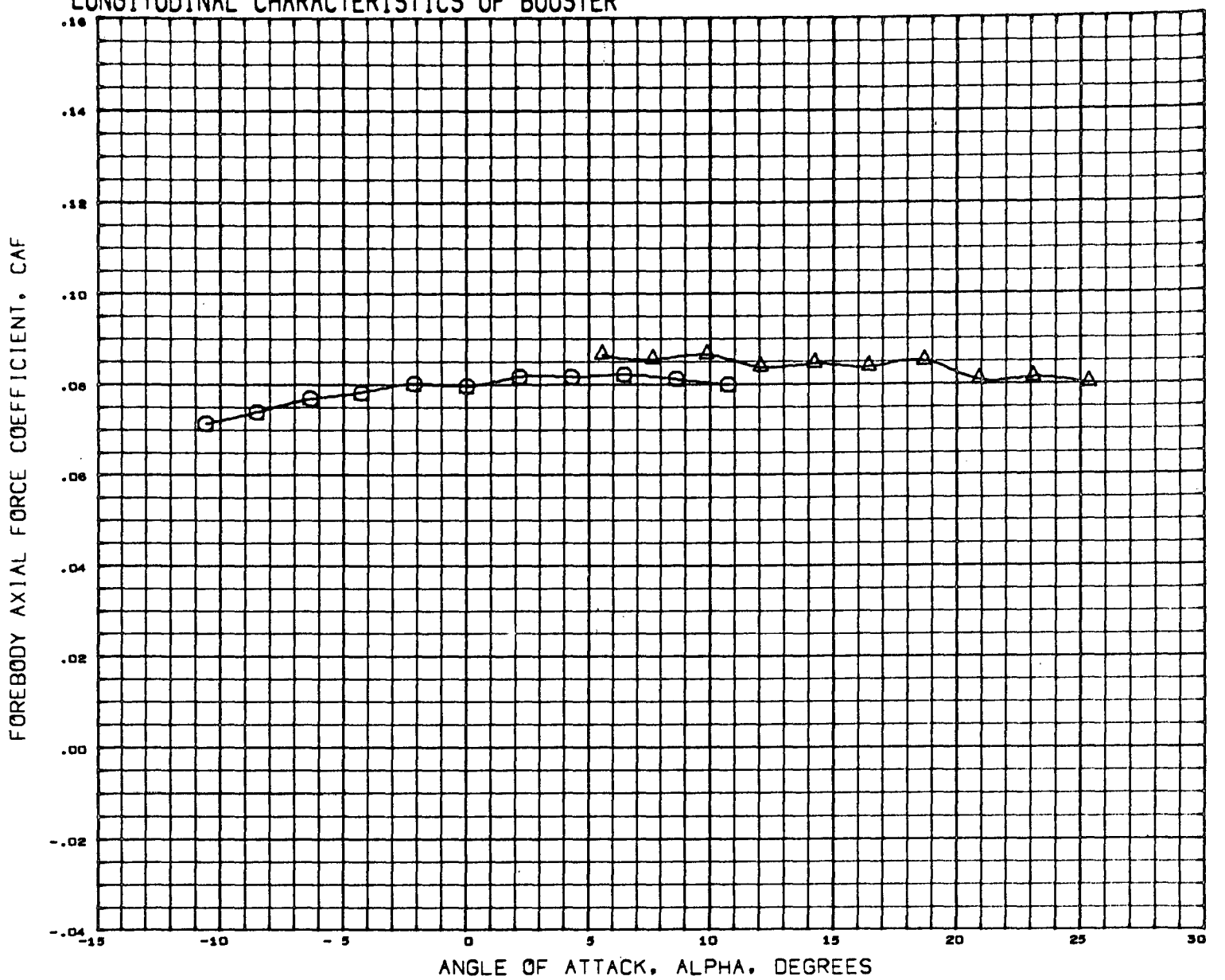


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

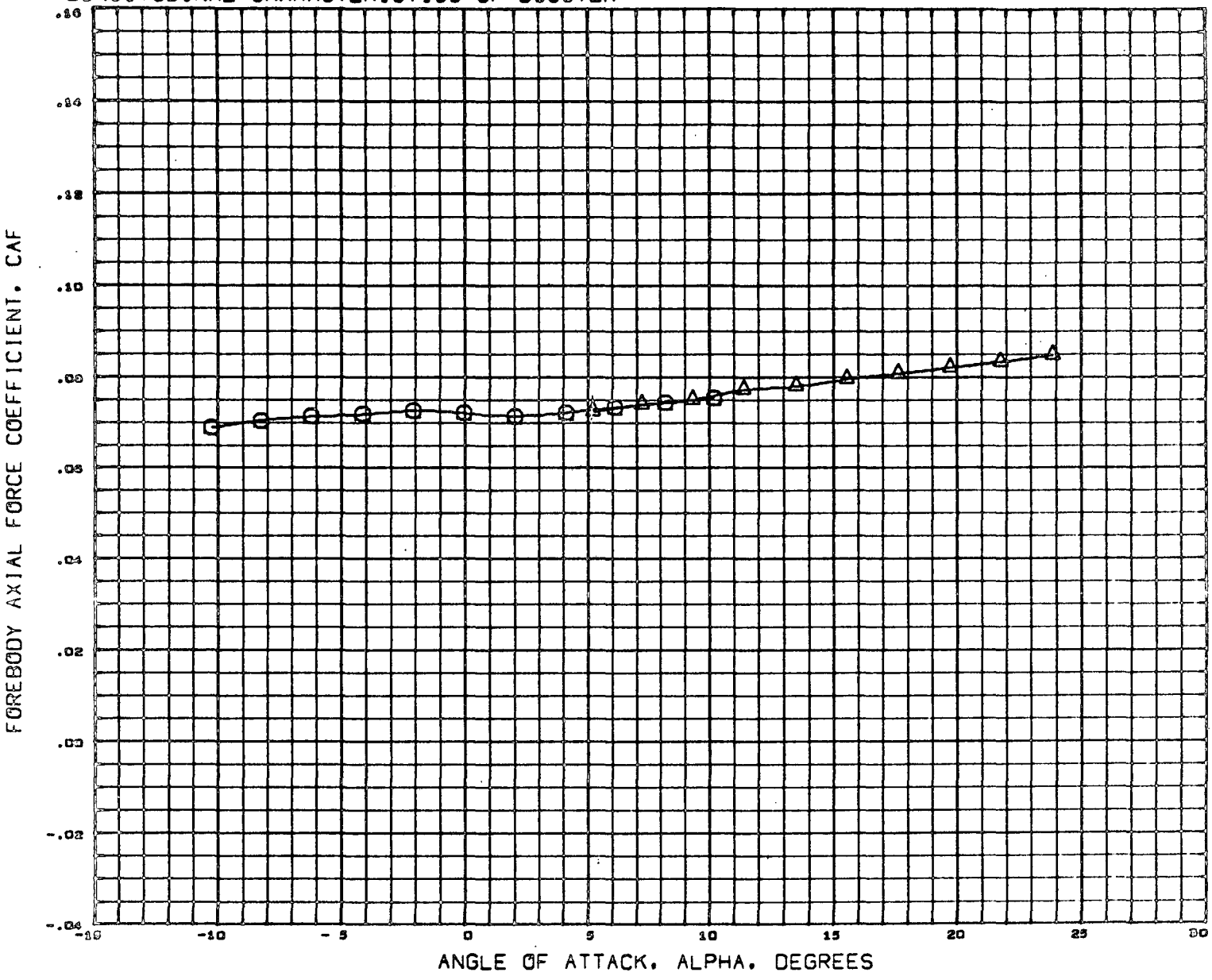


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

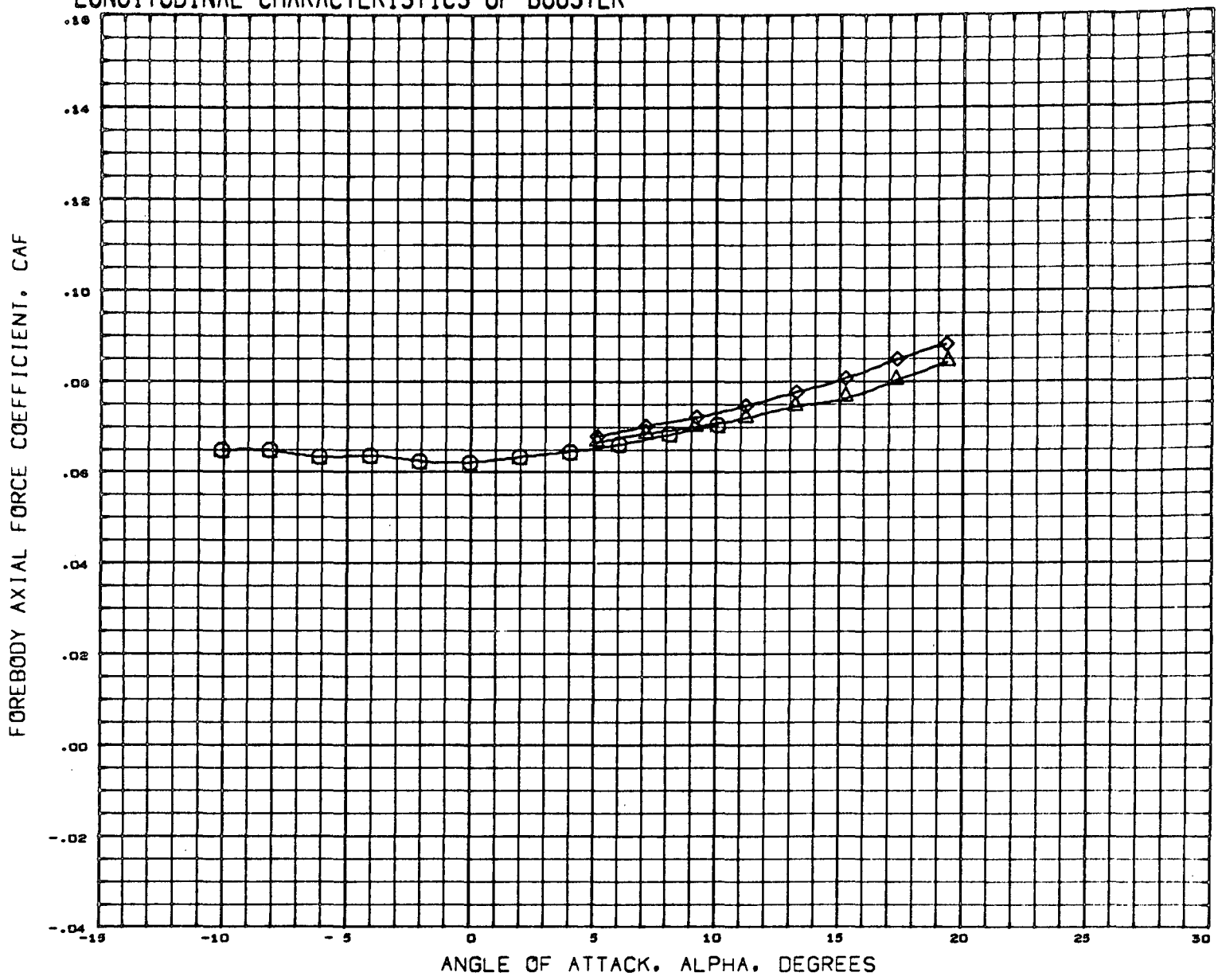


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3209B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3297B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

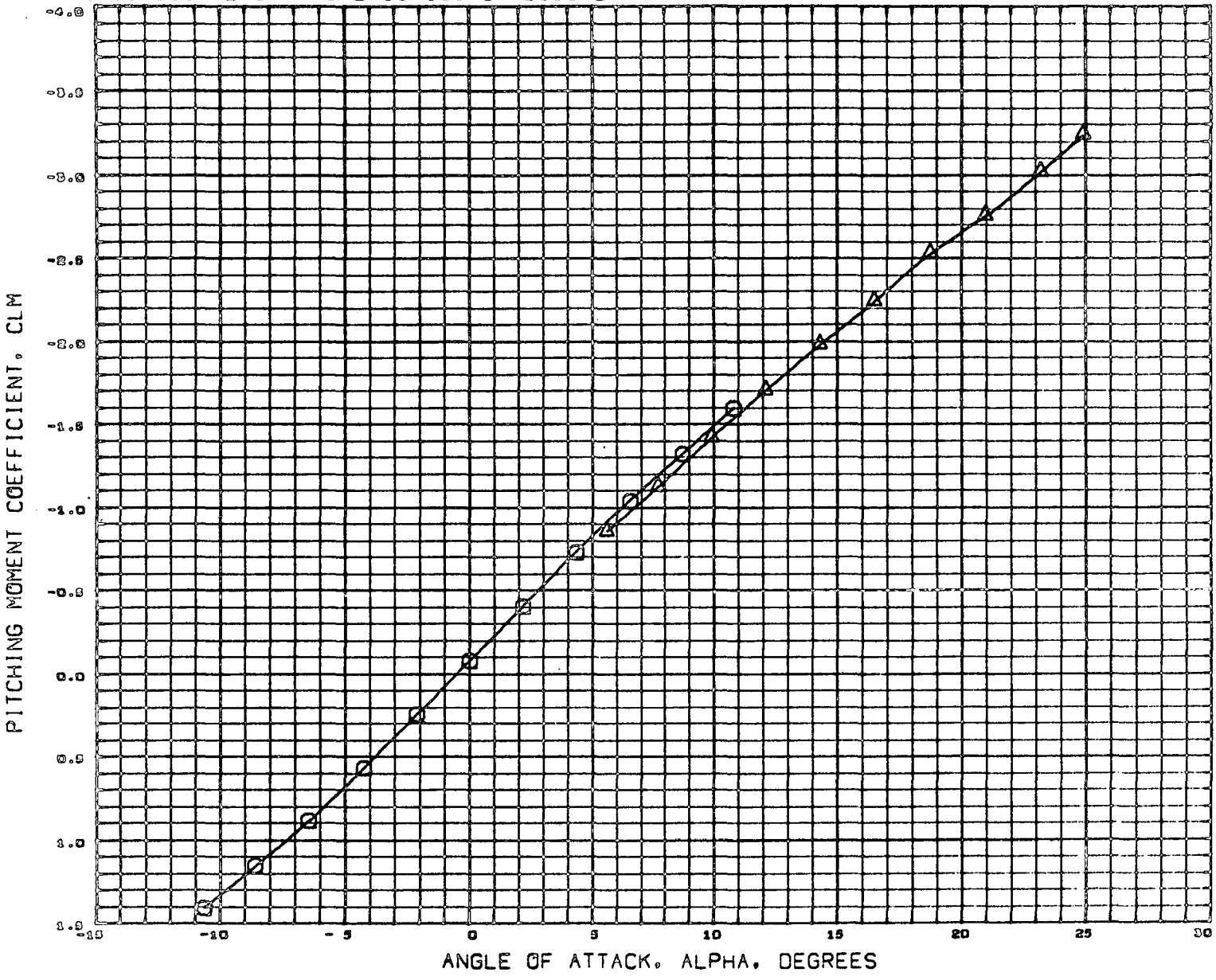


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	10.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

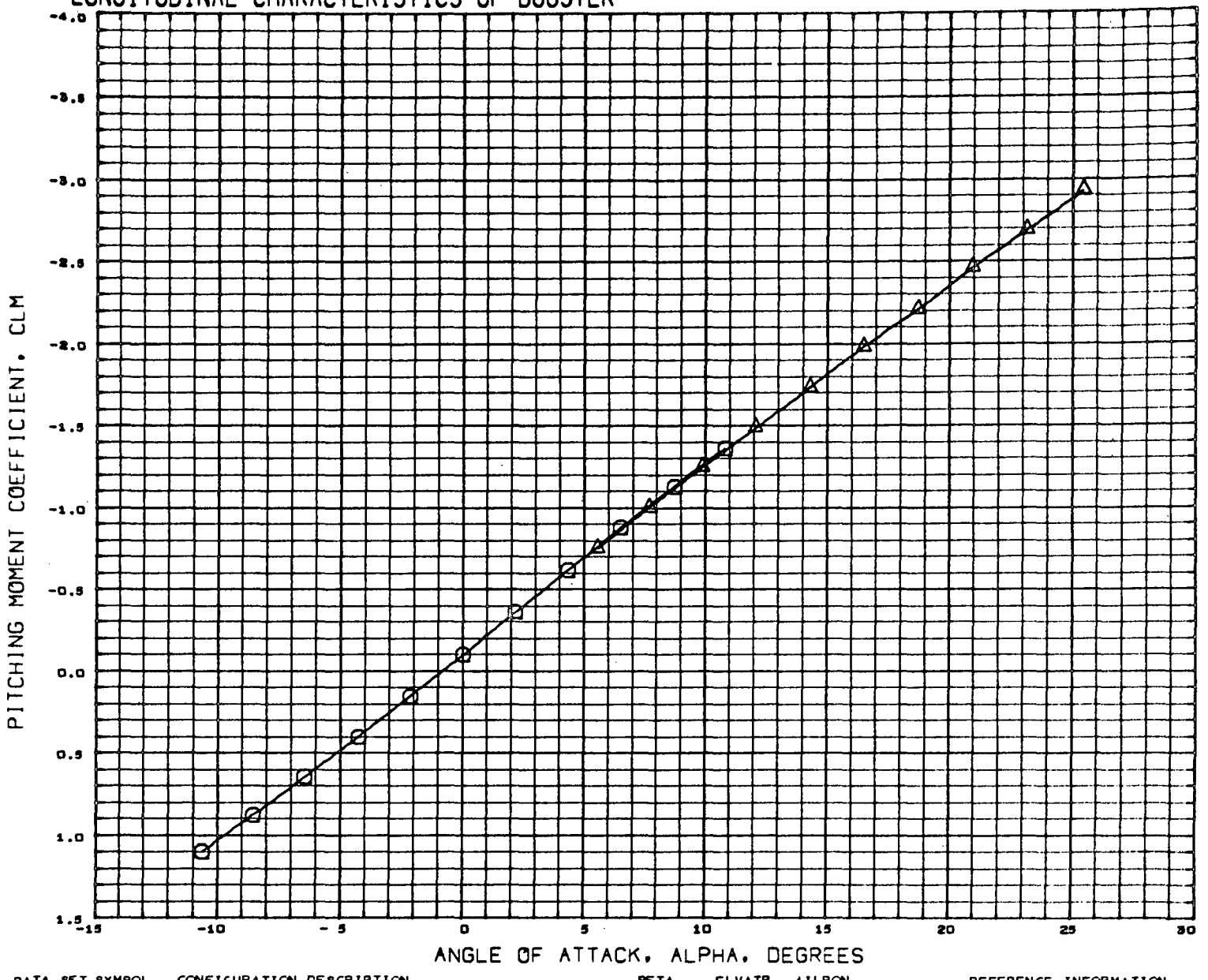


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3209B)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3297B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

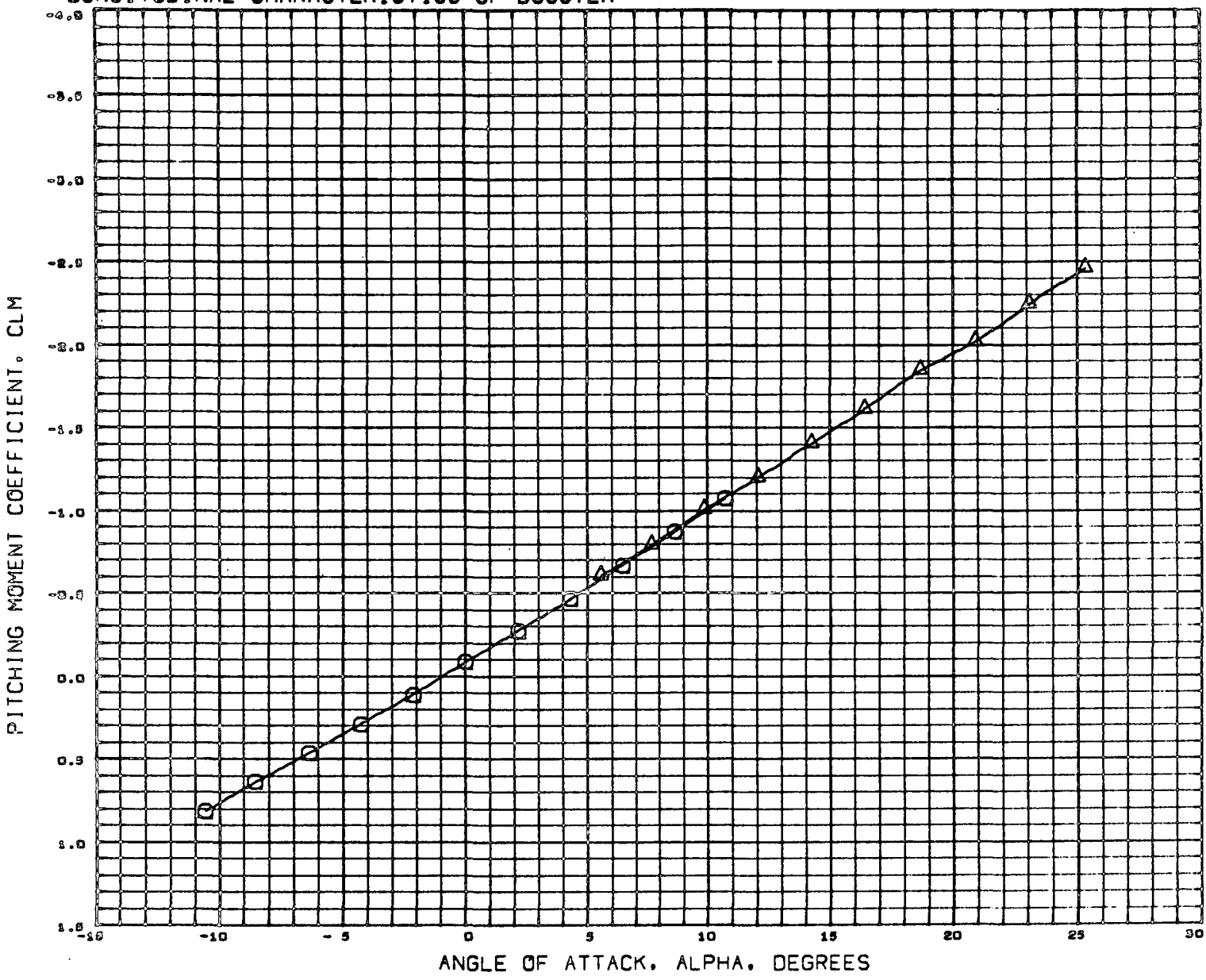


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

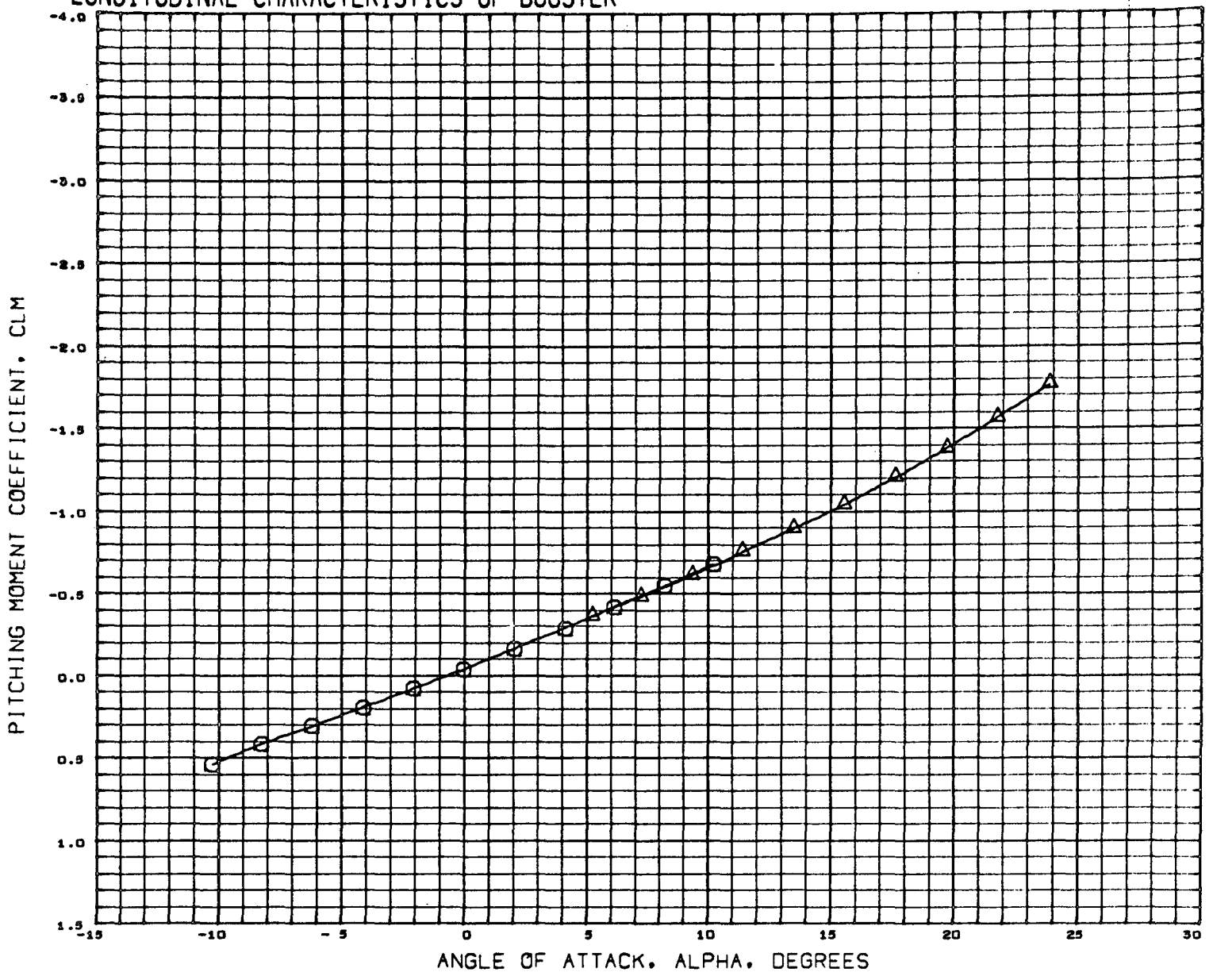


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3203A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(N3203B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(N3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



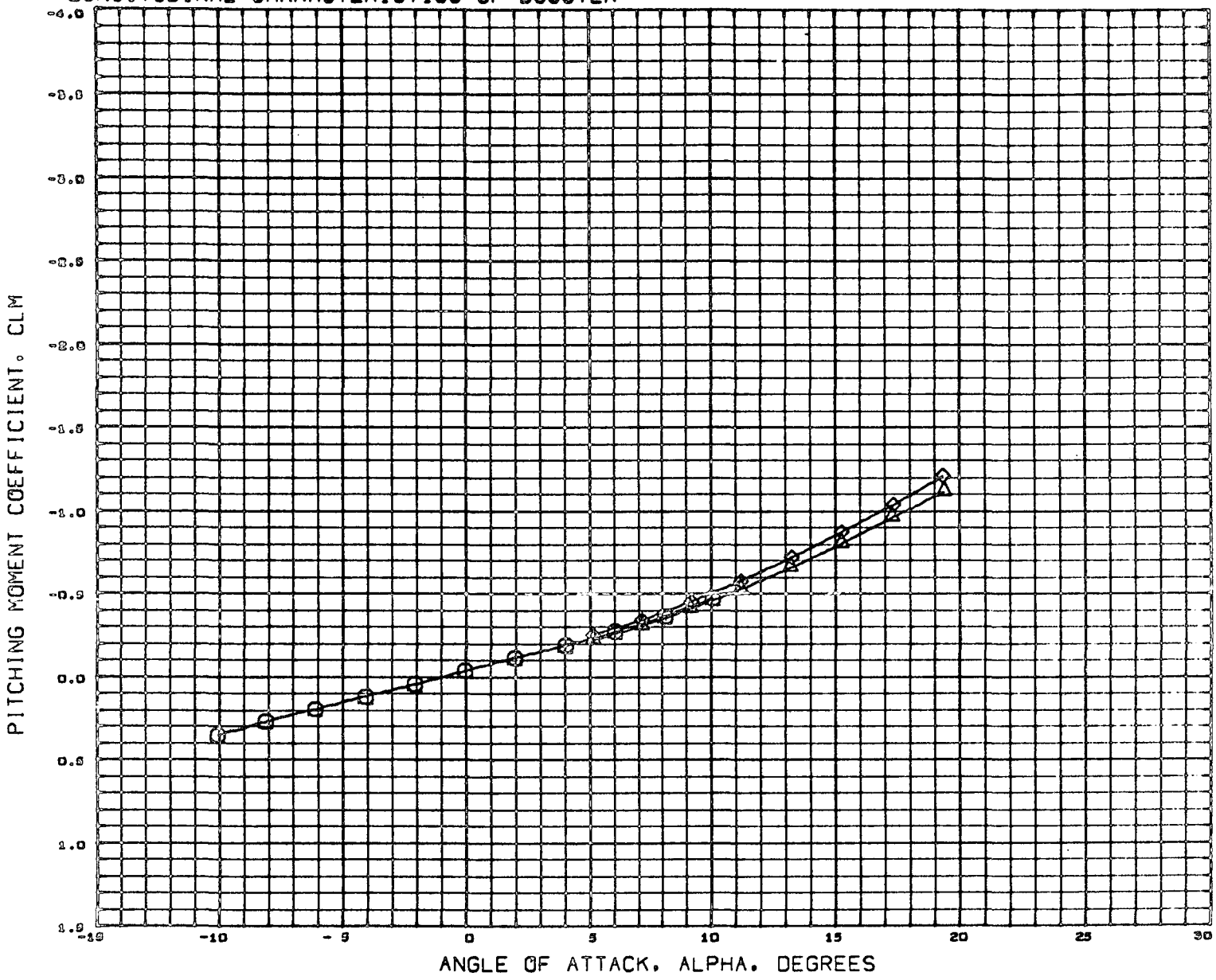
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 2.990

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

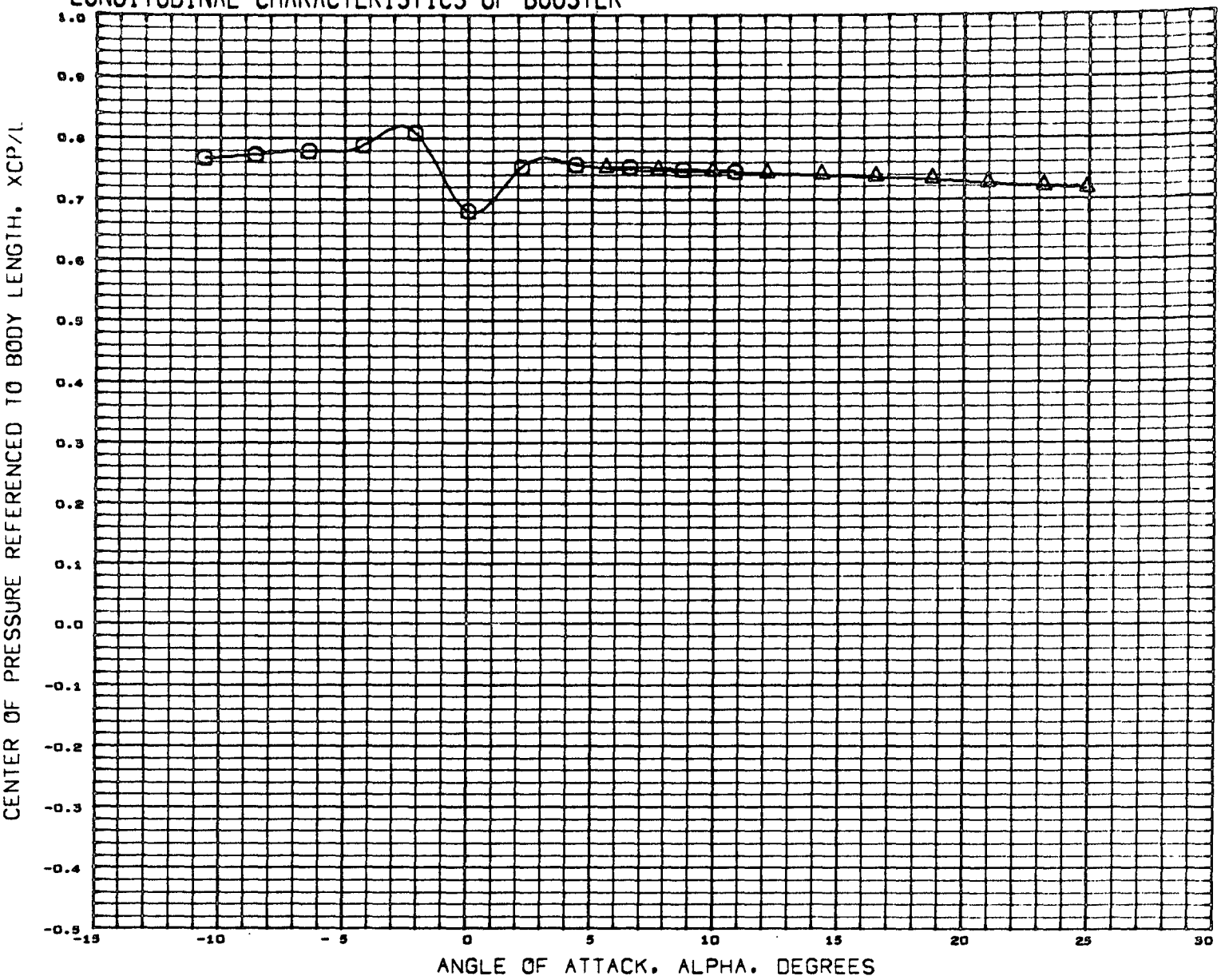


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(N3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(N3257B)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	10.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

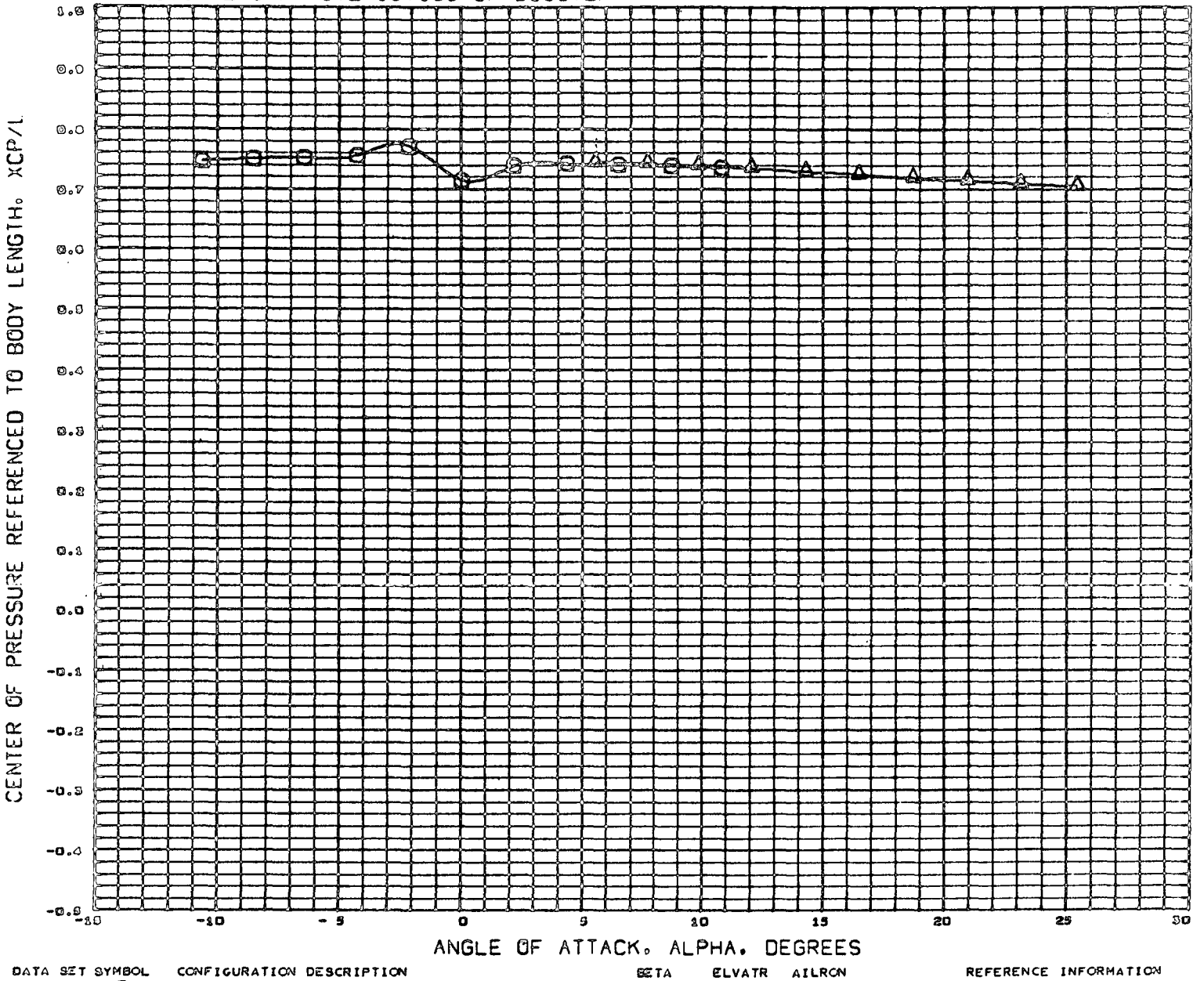


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

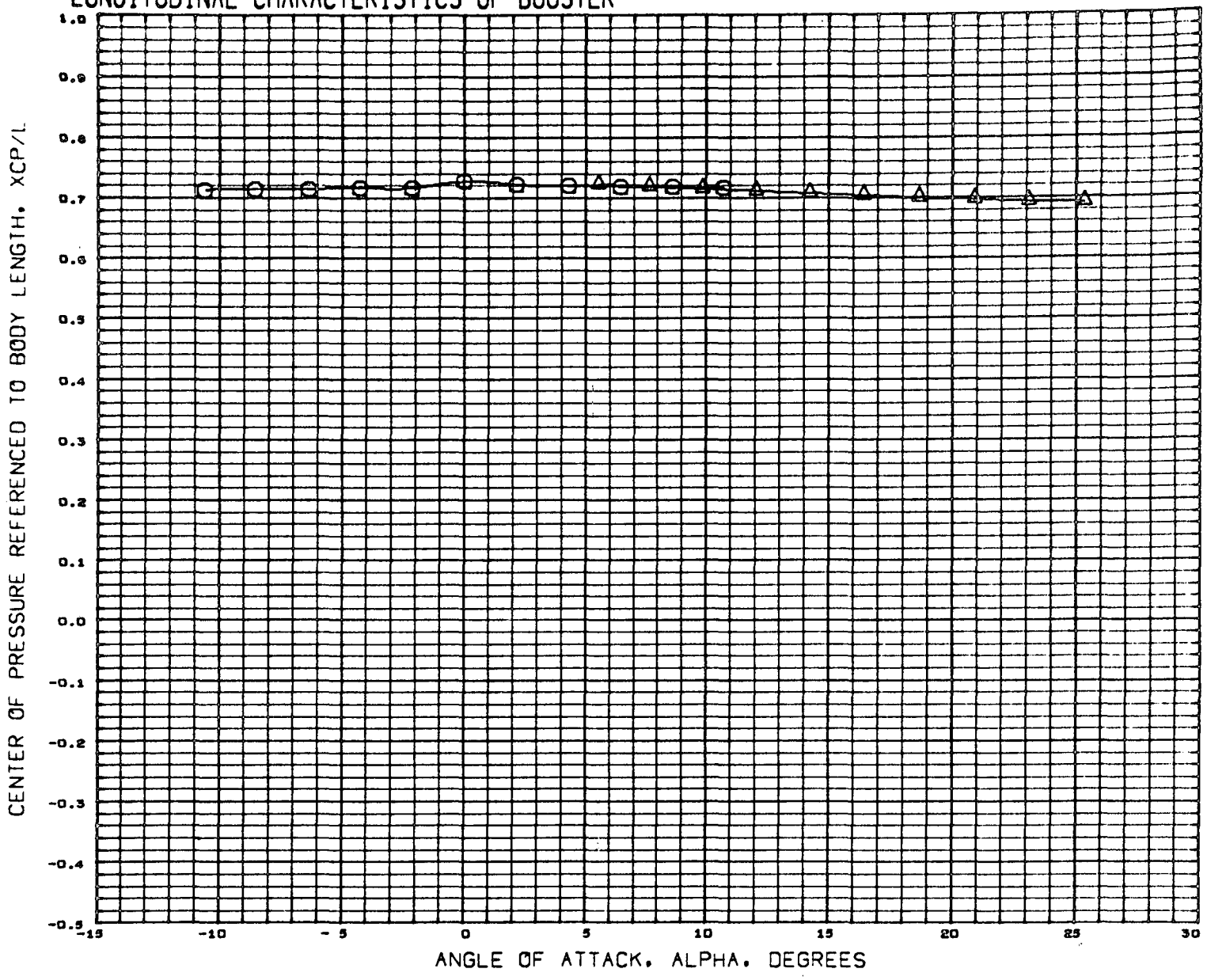


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3209B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3297B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.486

LONGITUDINAL CHARACTERISTICS OF BOOSTER

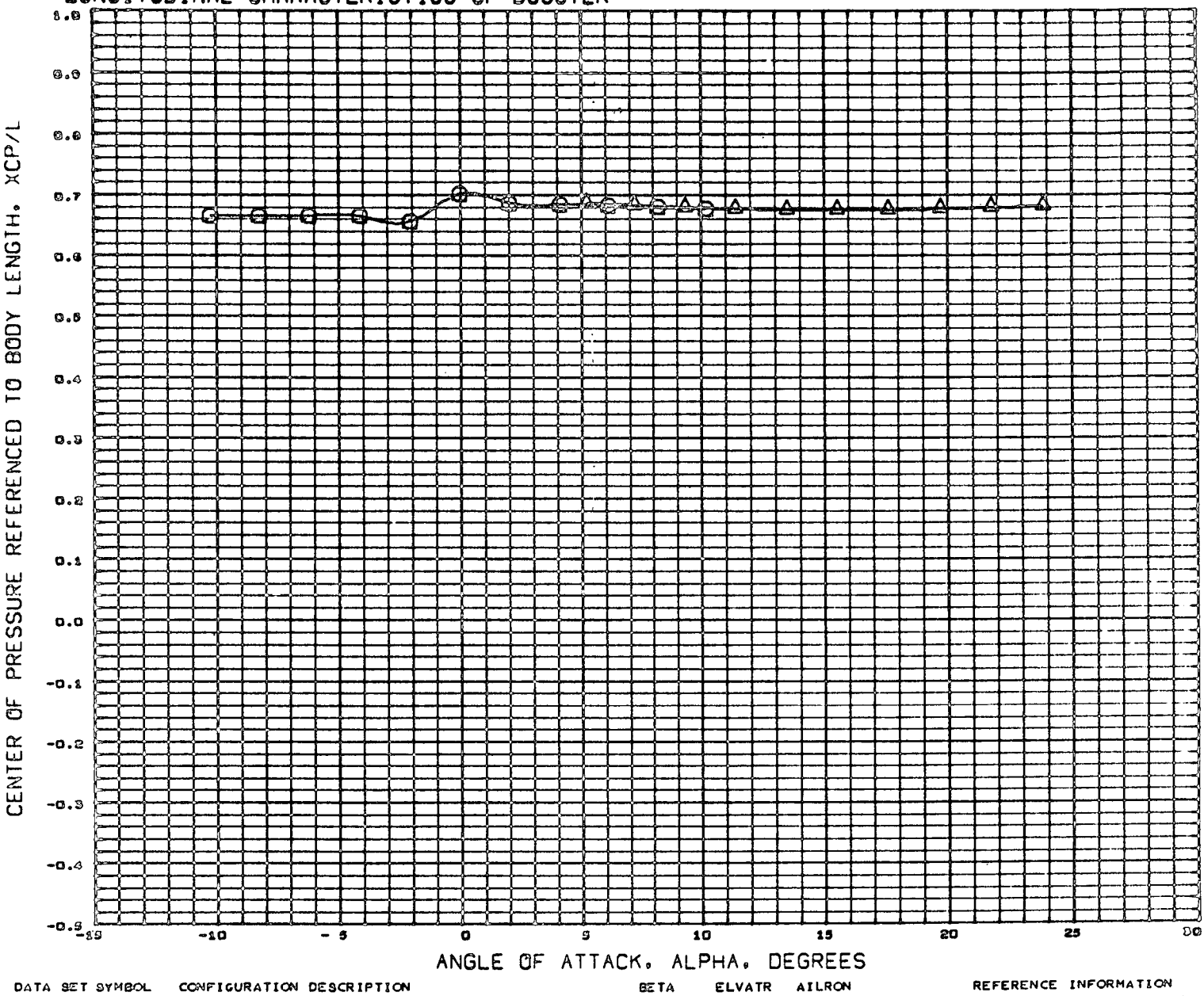


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

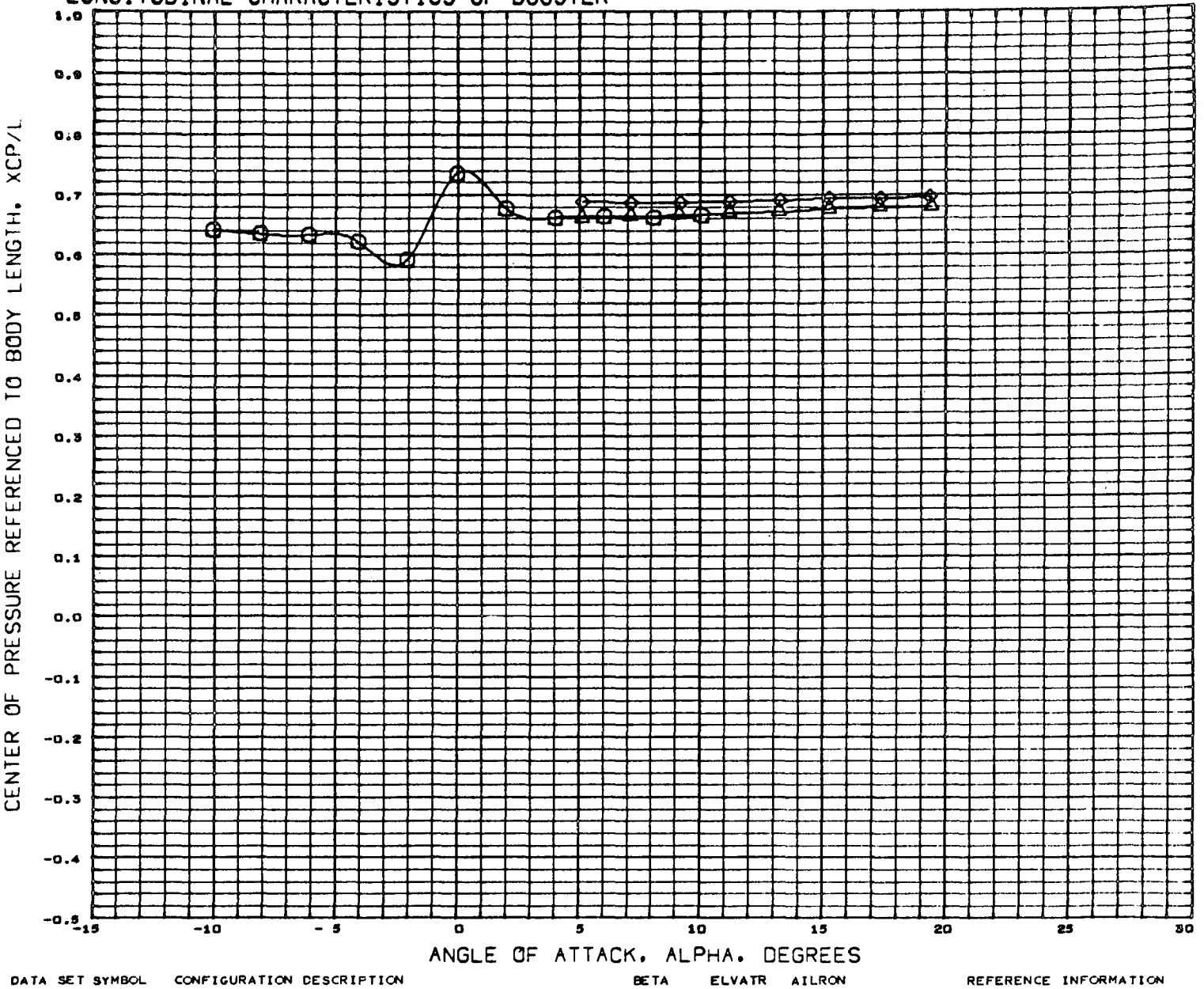


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V0	0.000	0.000	0.000
(M3209B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 2.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

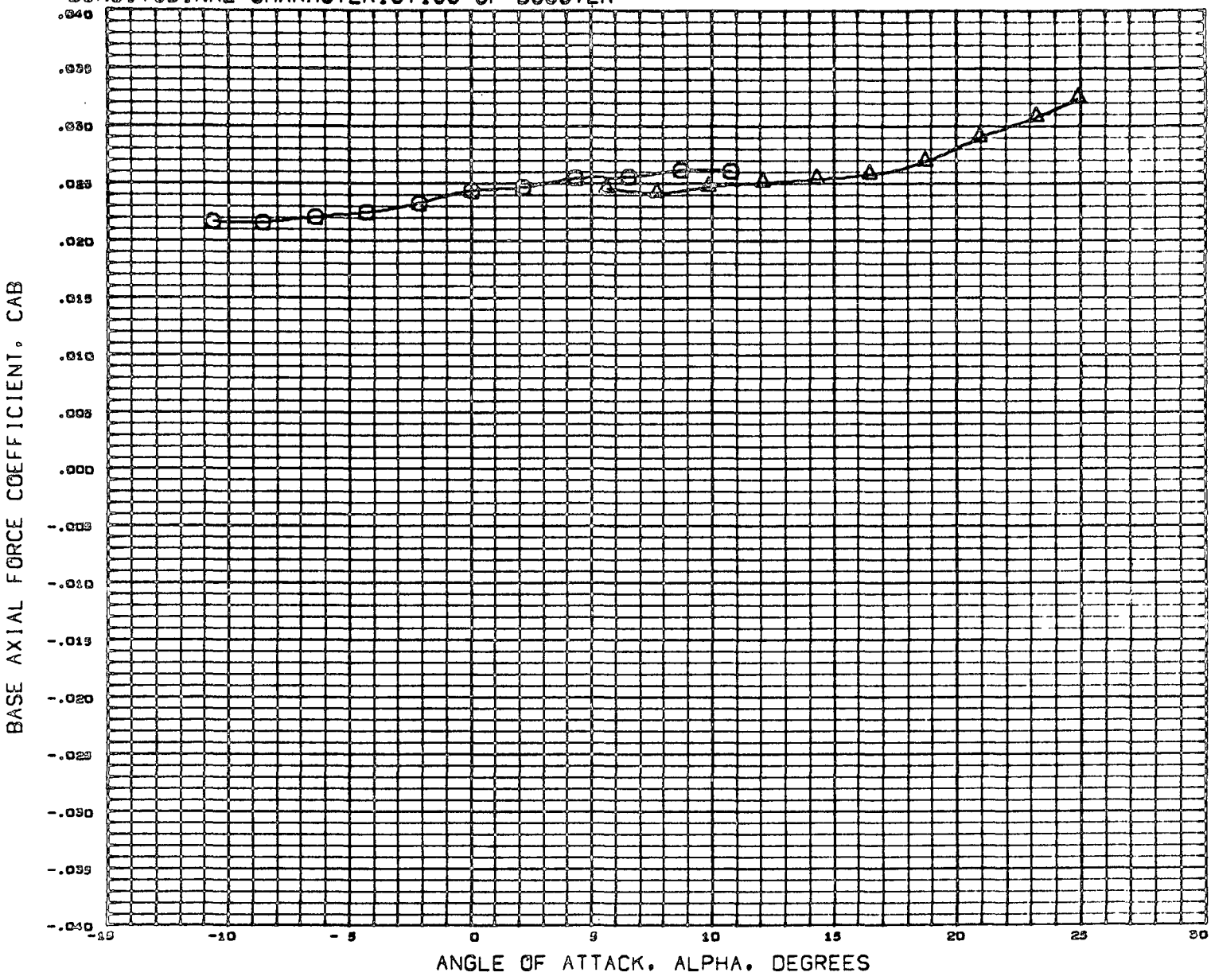


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	10.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

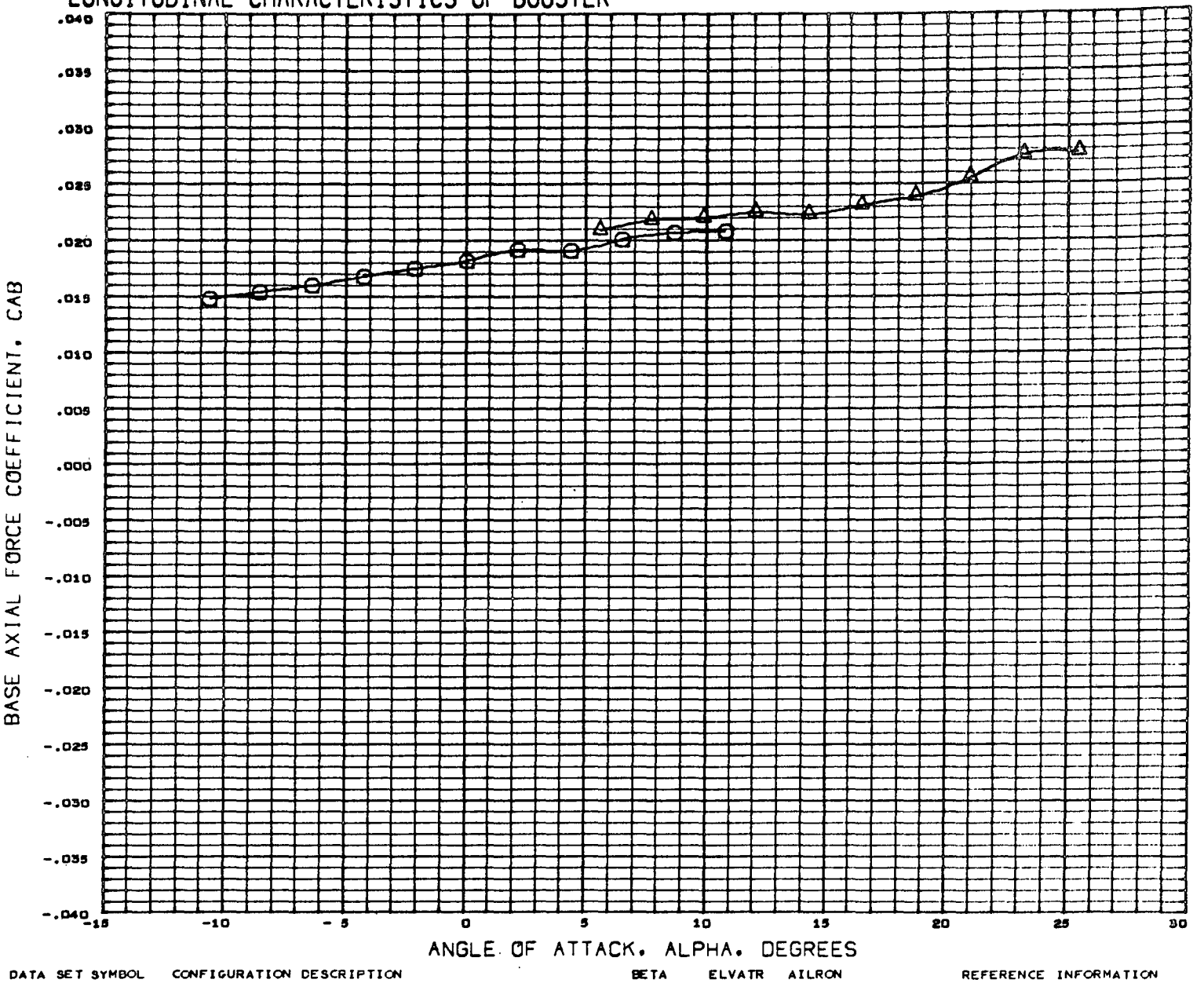


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3209B)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3297B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0930	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

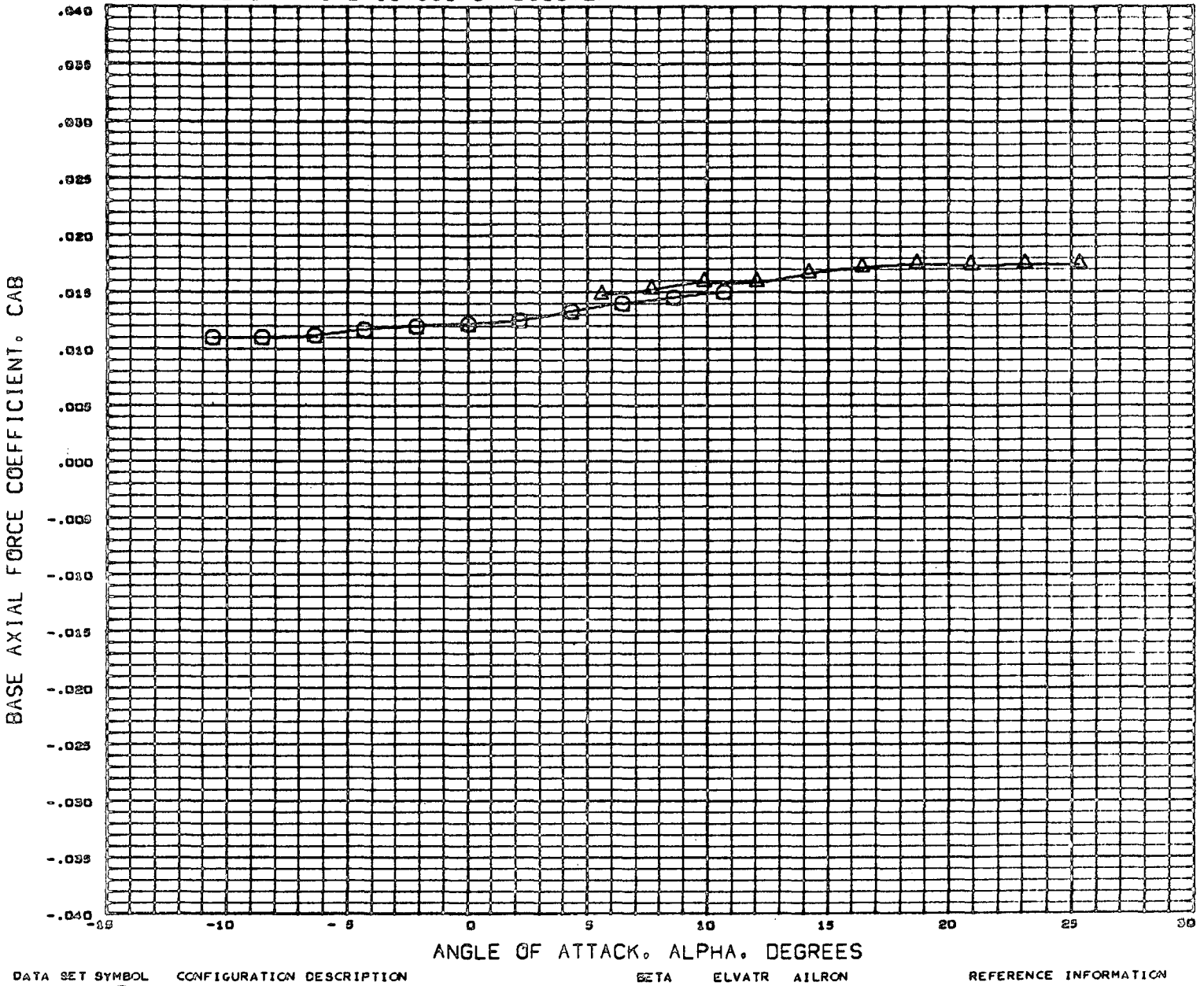


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

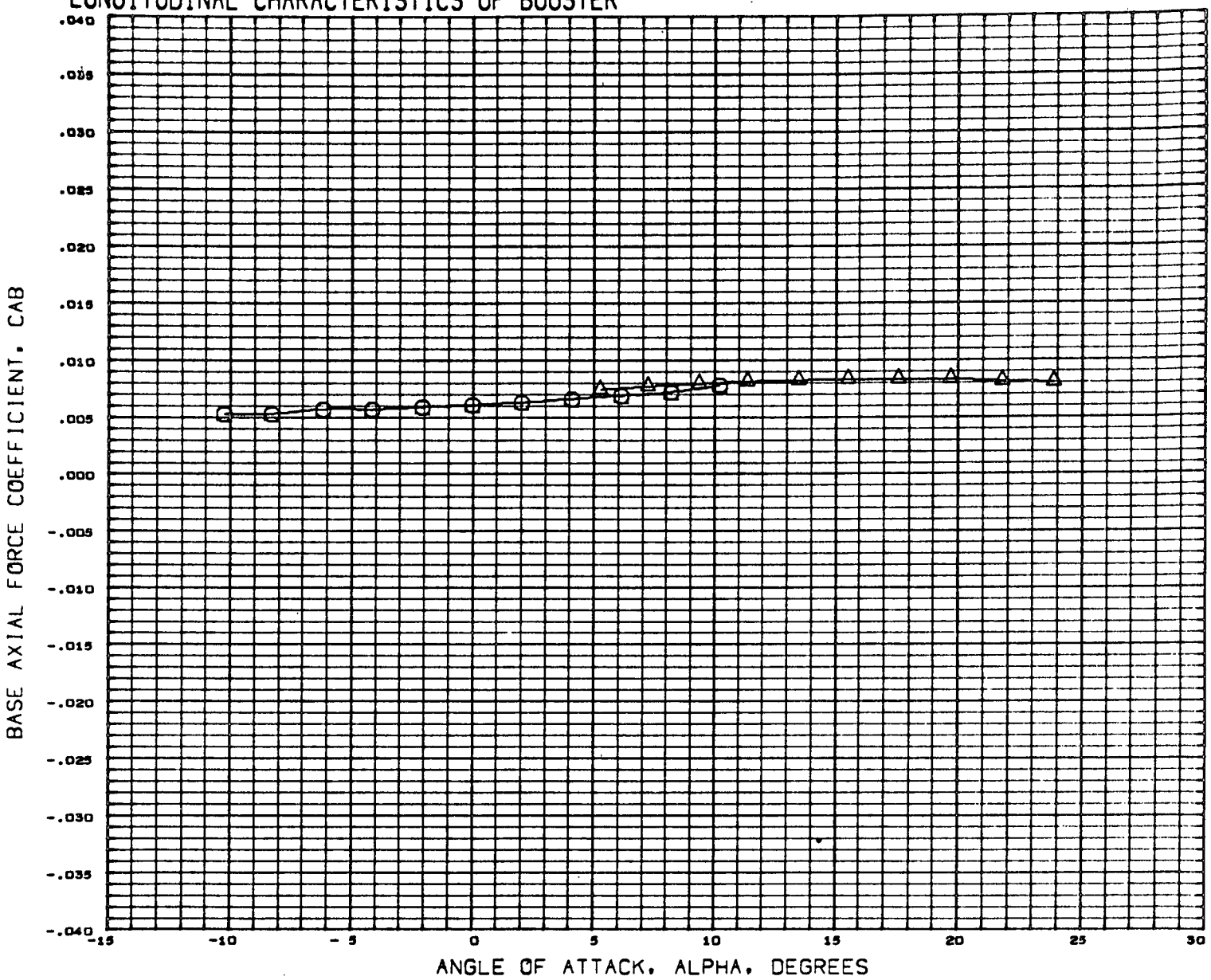


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3209B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

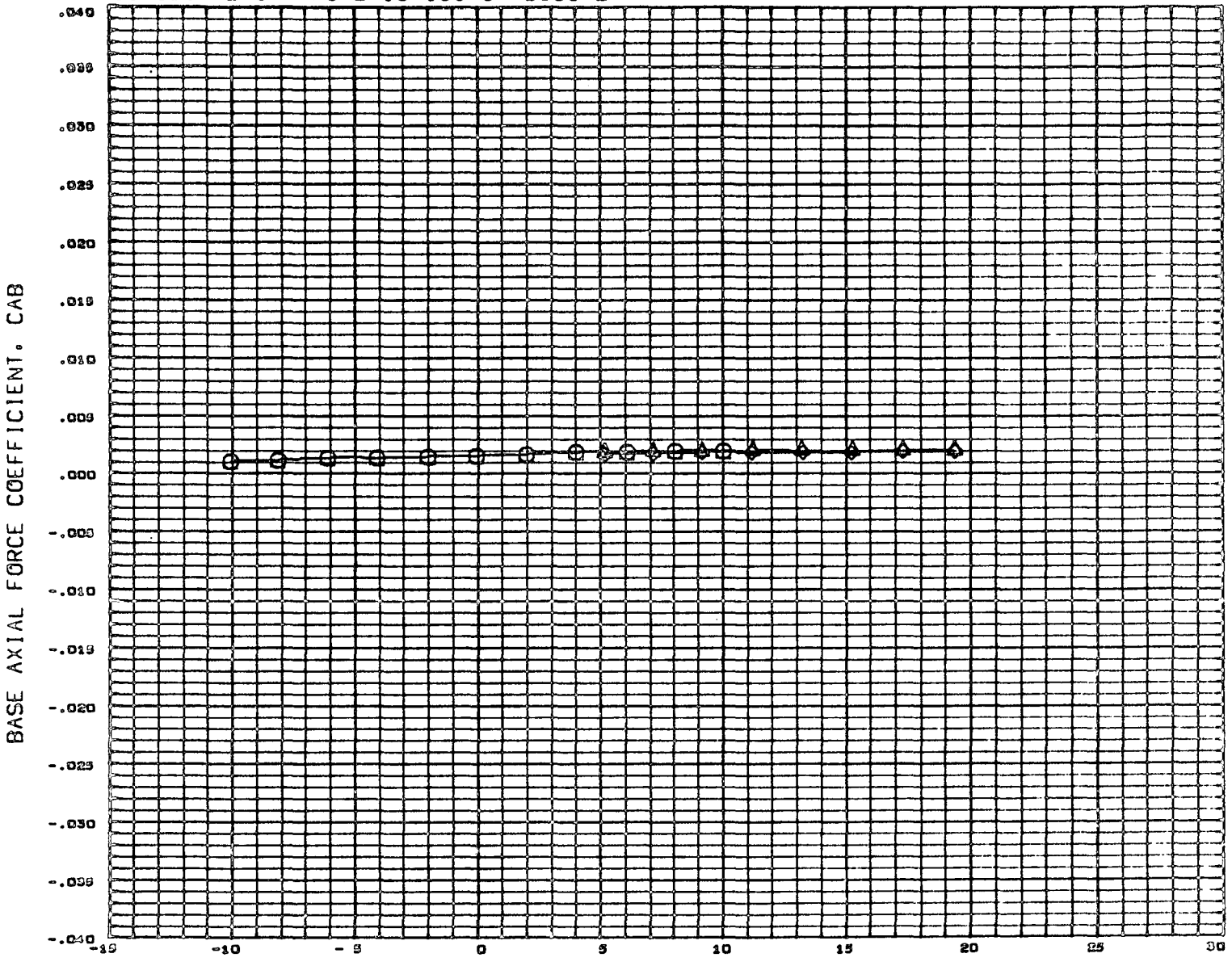


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

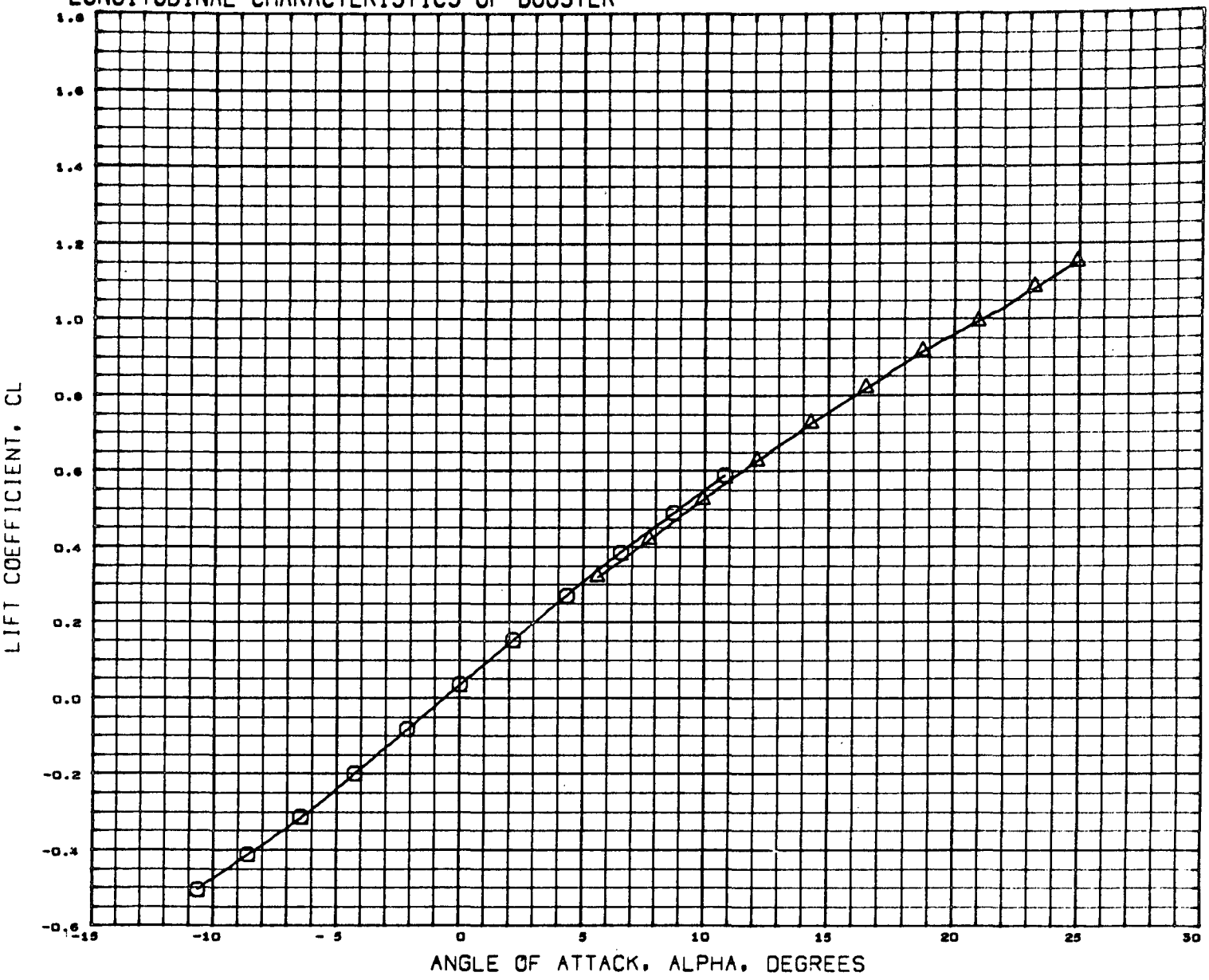


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(N3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(N3257B)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	10.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

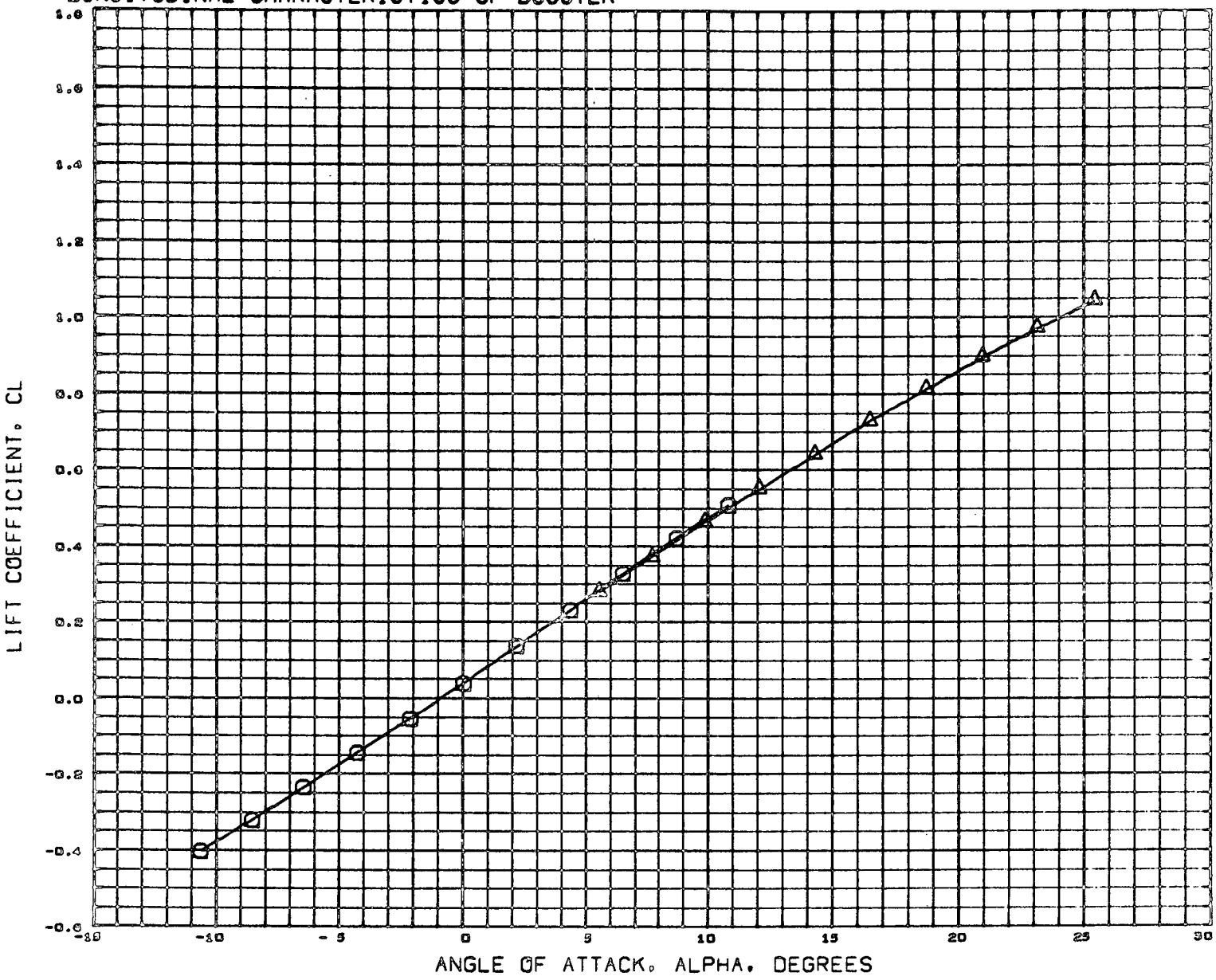


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER 820C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER 820C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

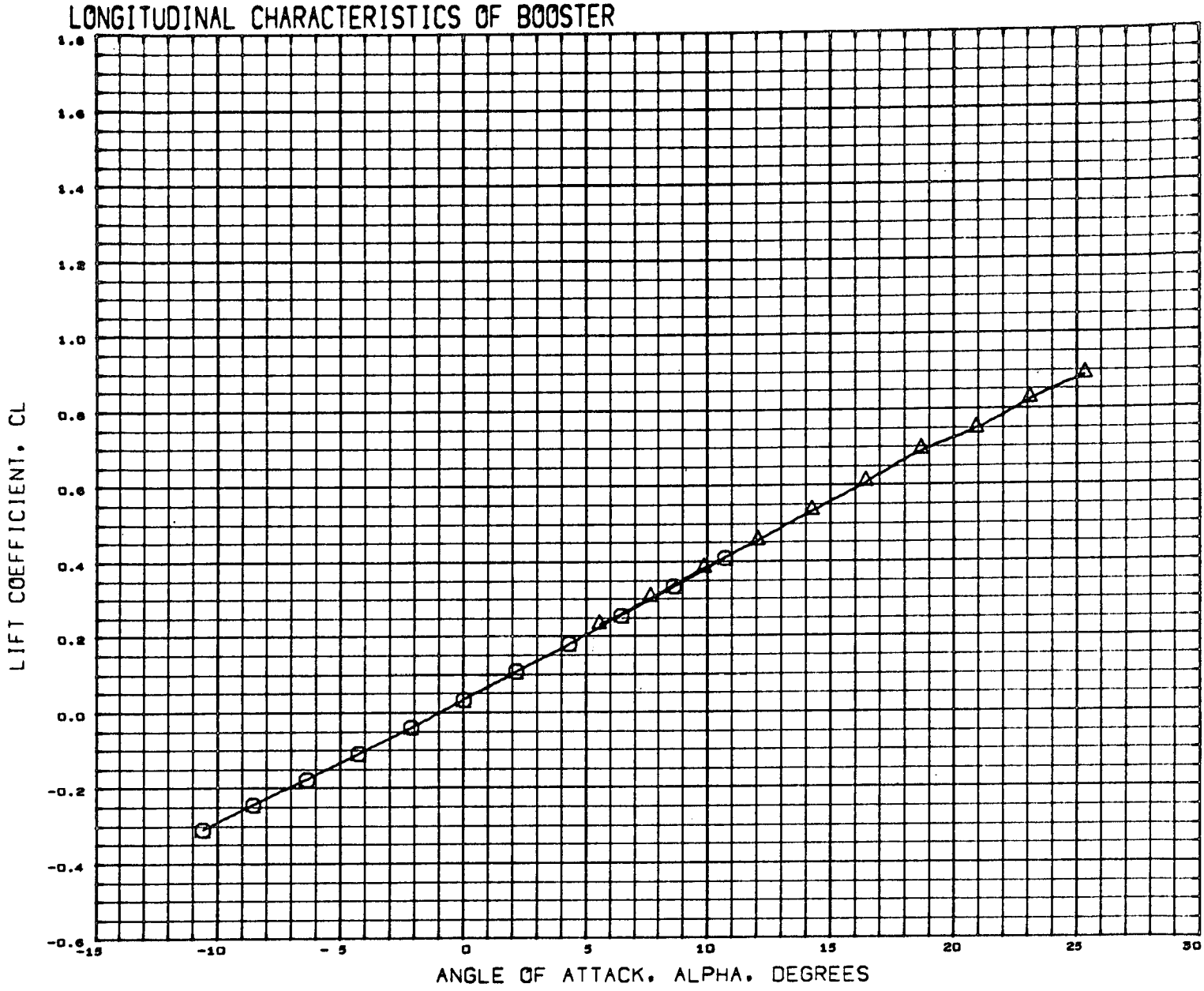


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



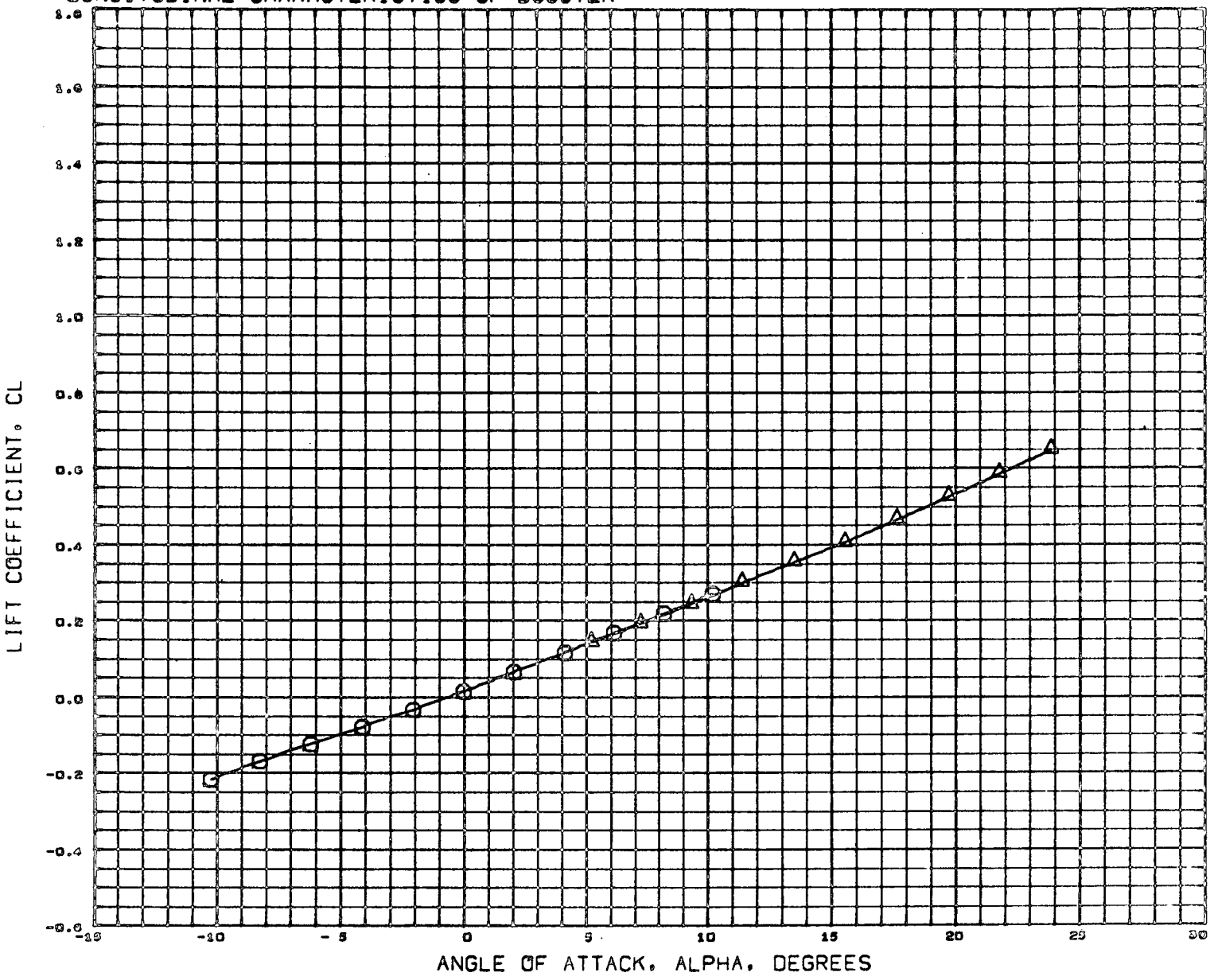
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.959

LONGITUDINAL CHARACTERISTICS OF BOOSTER

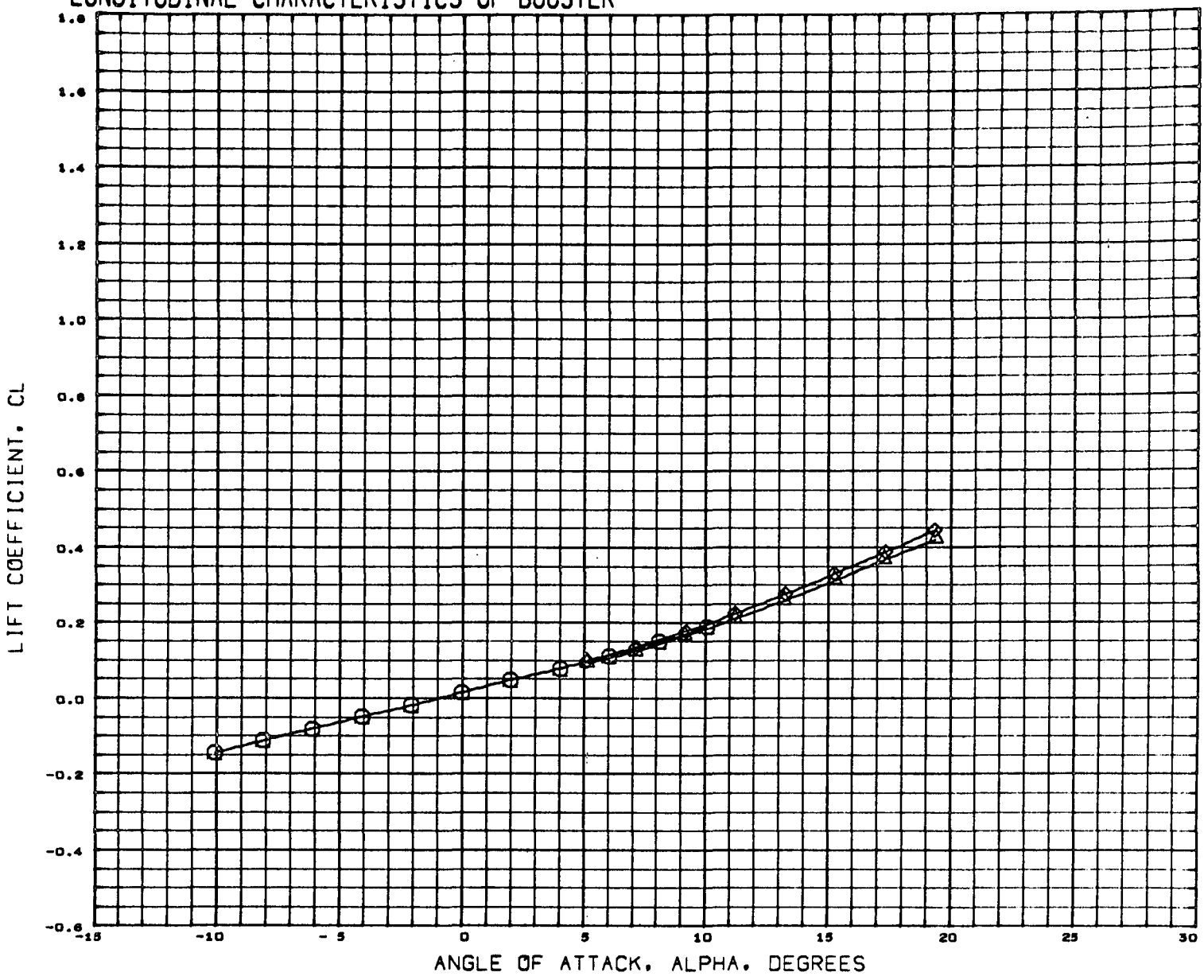


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3237B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

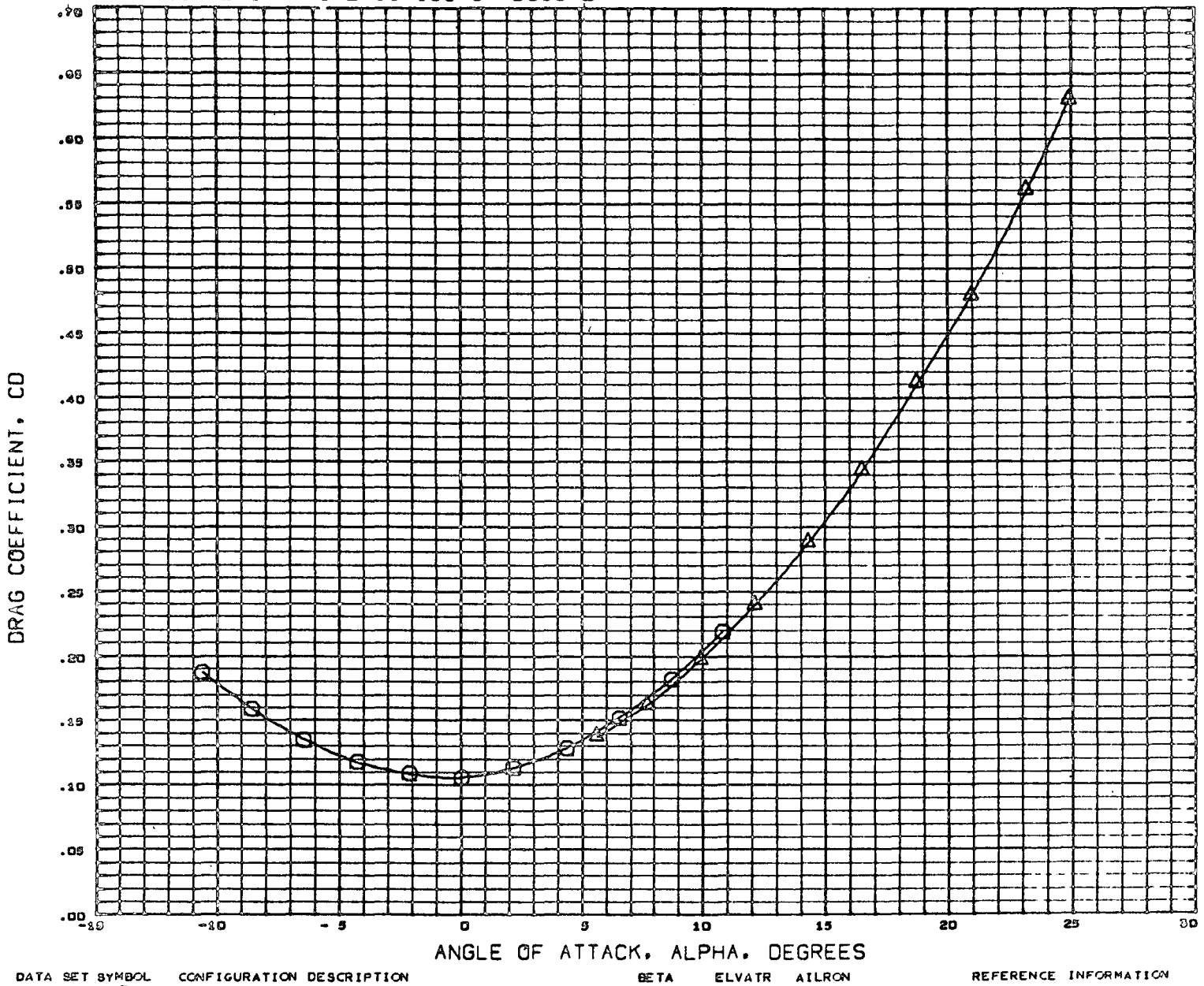


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	10.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

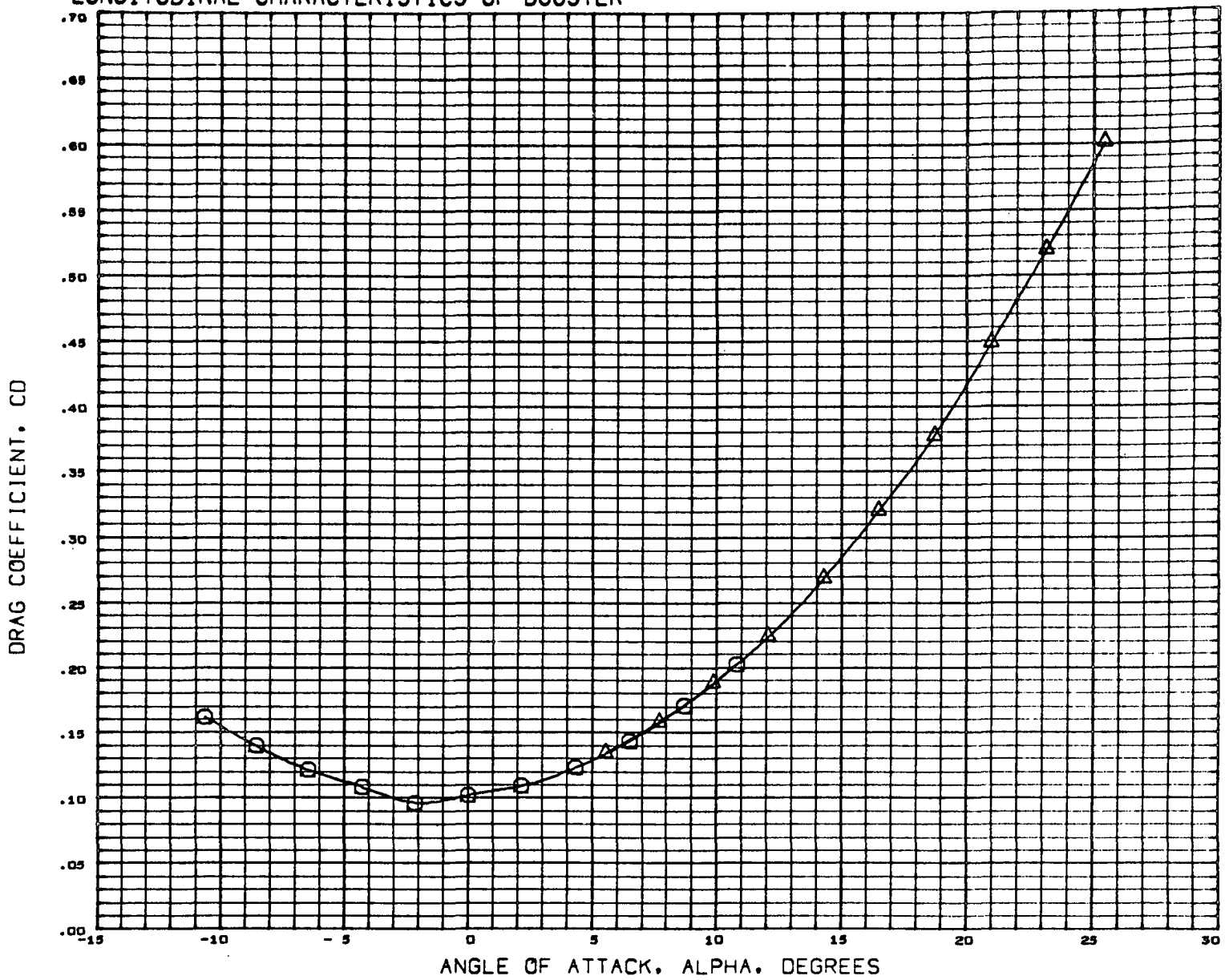


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3209B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3297B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

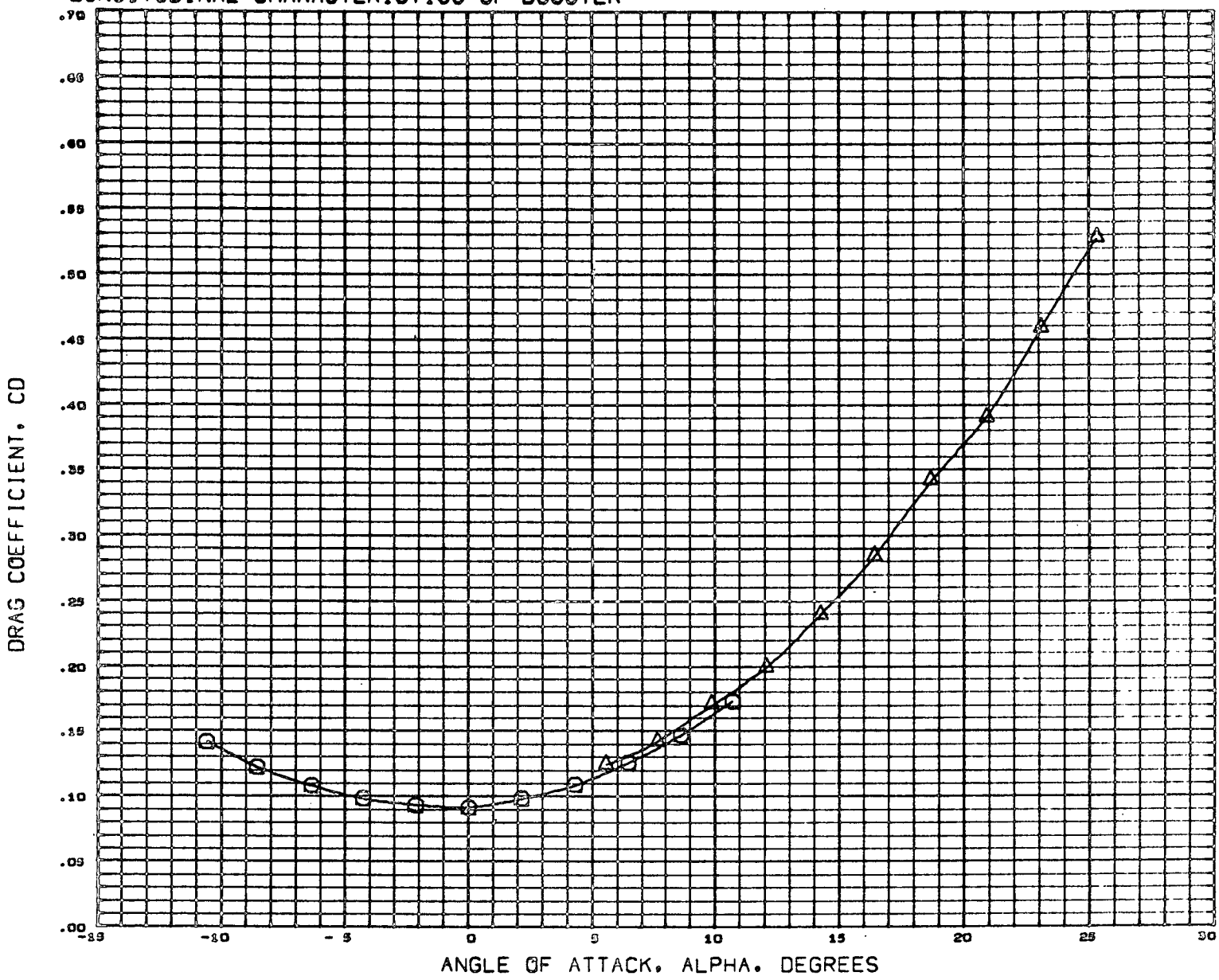


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

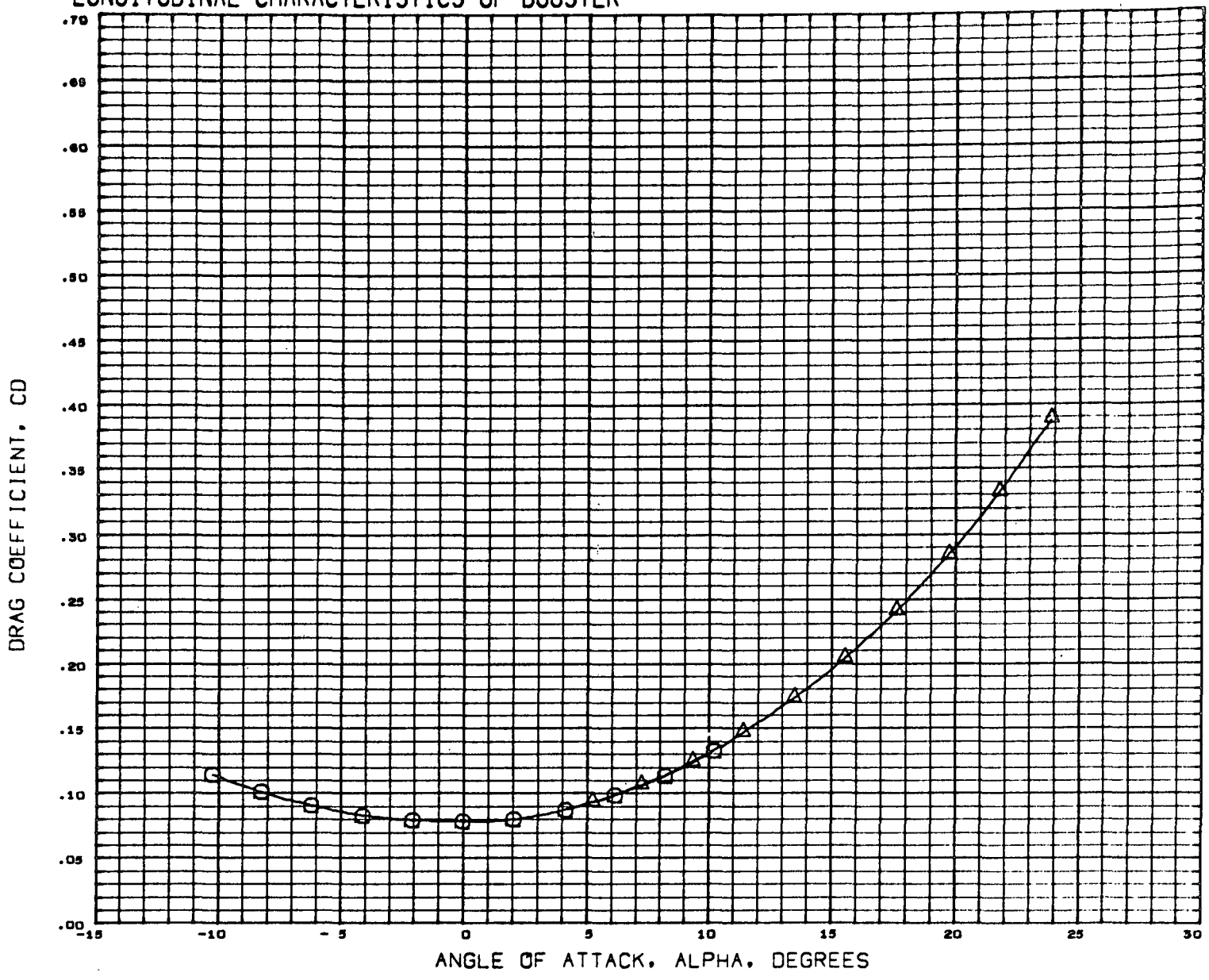


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER



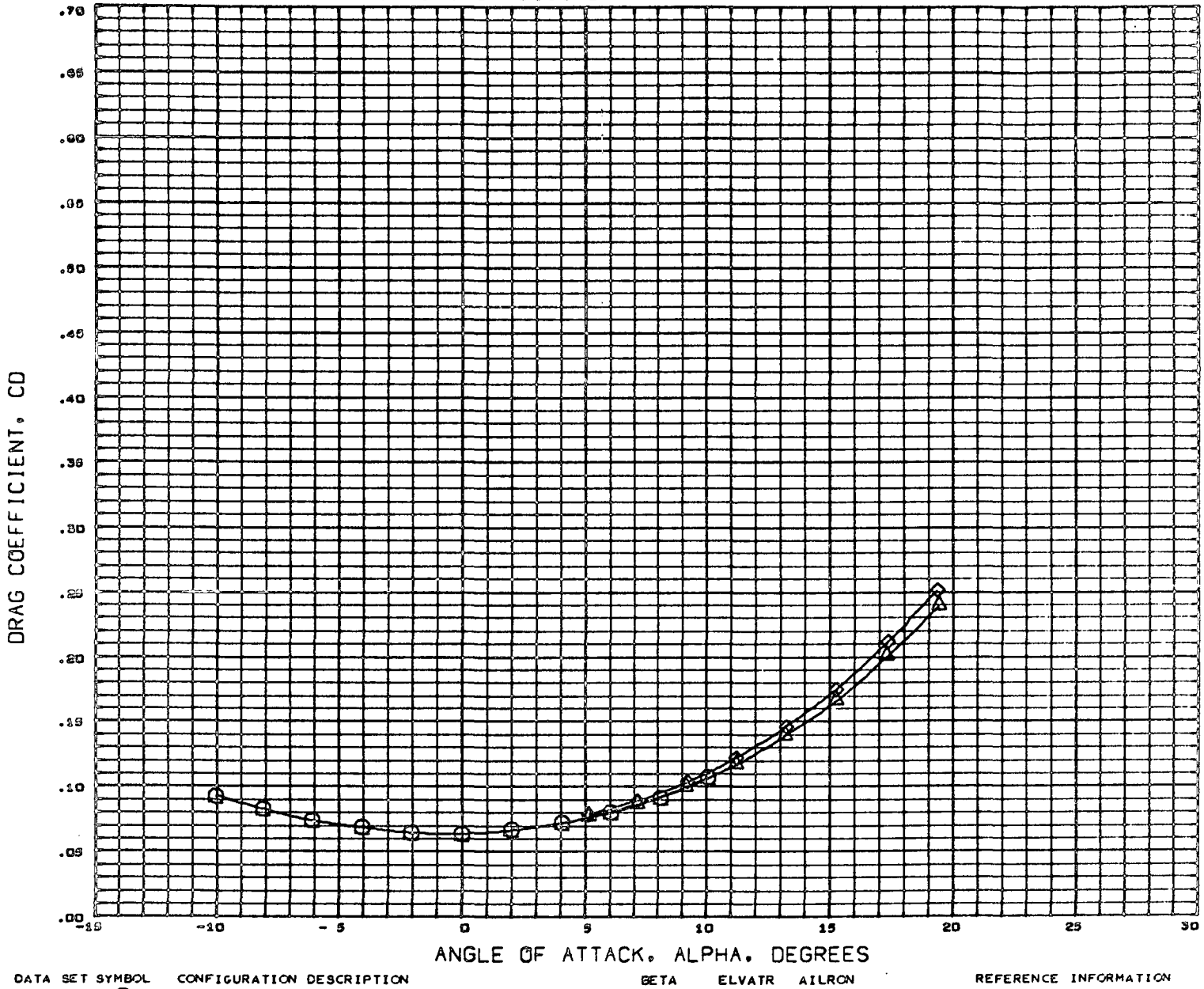
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 2.990

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

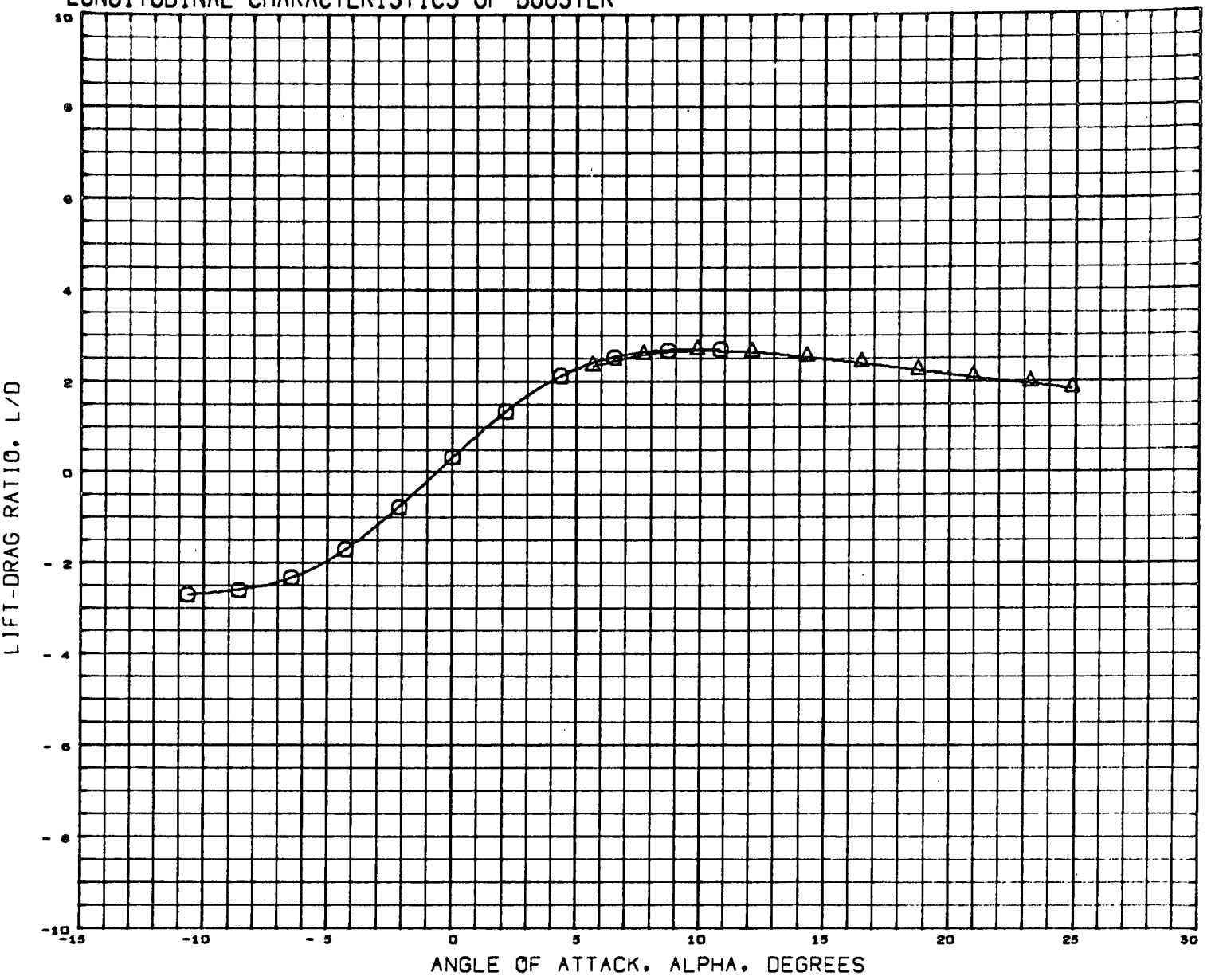


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3257B)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	10.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

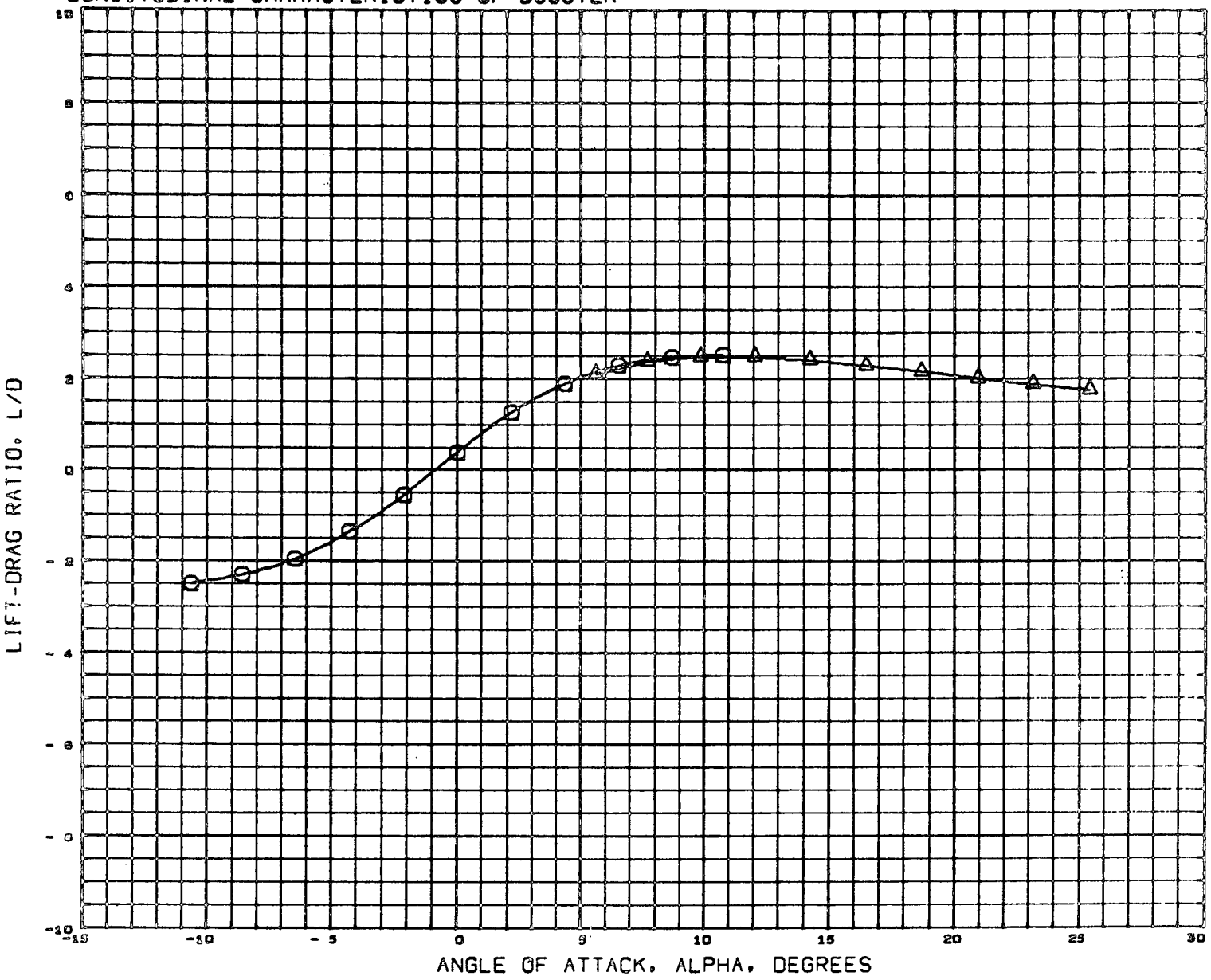


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN.
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

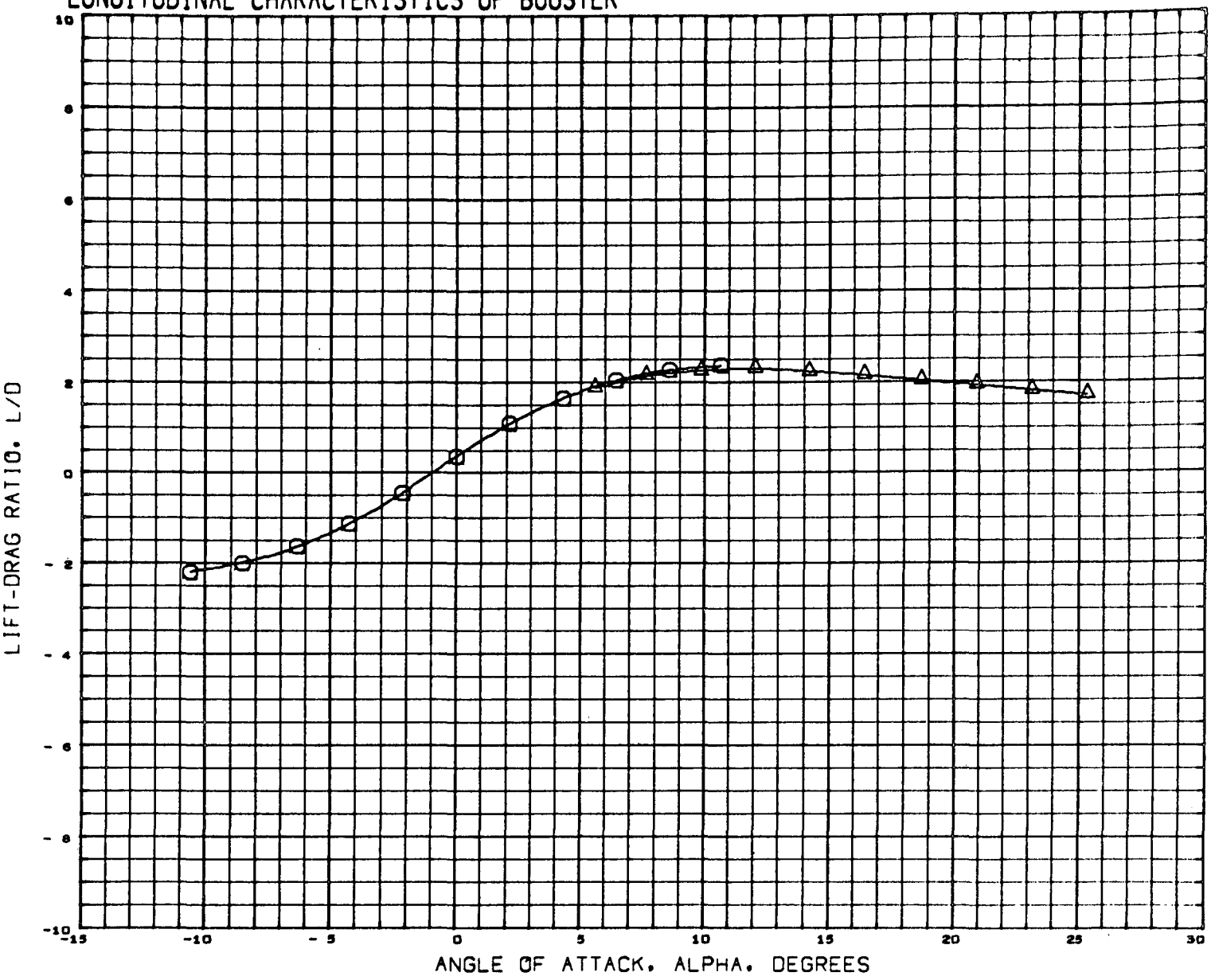


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3209B)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3297B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

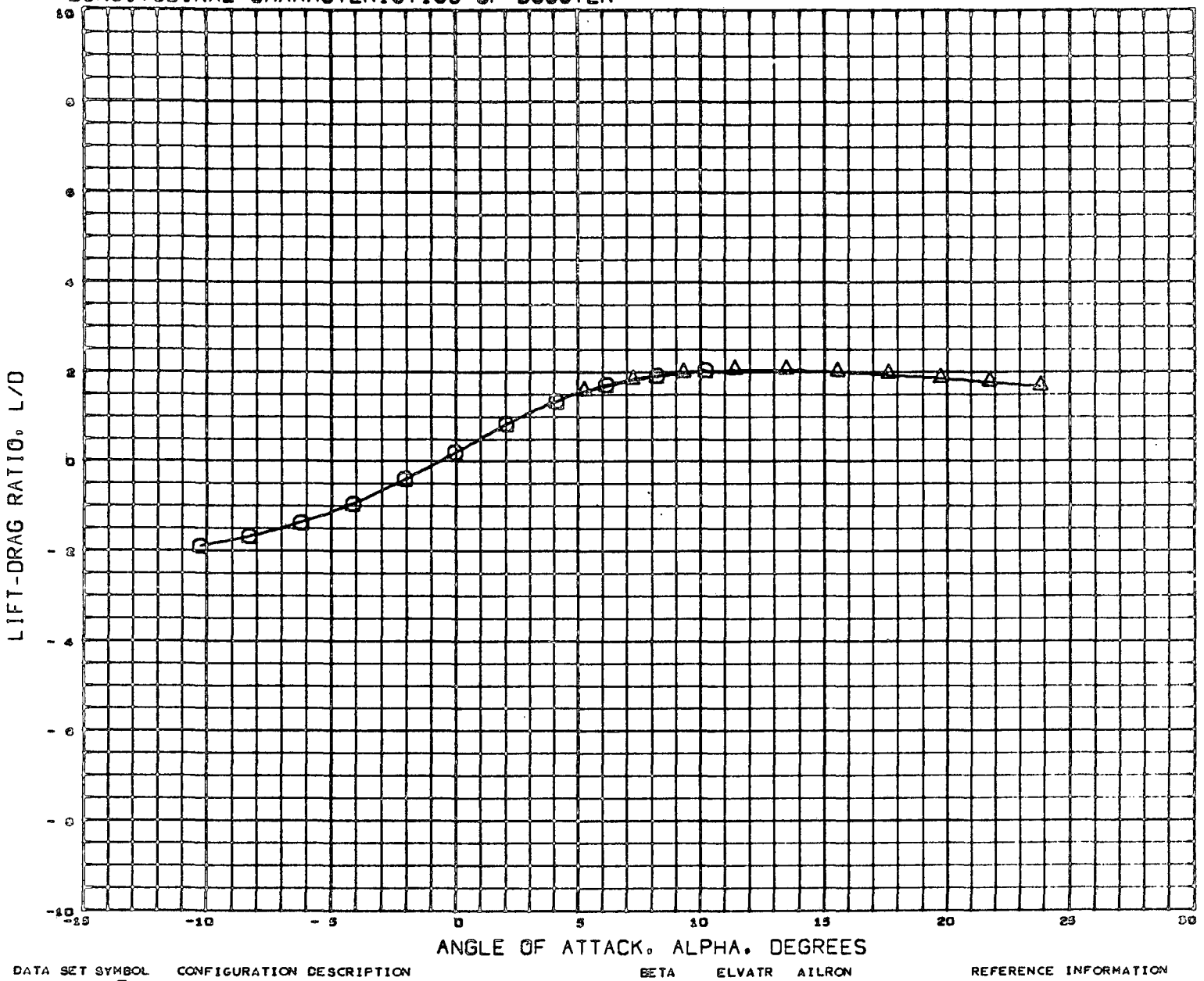


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	⊠	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.959

LONGITUDINAL CHARACTERISTICS OF BOOSTER

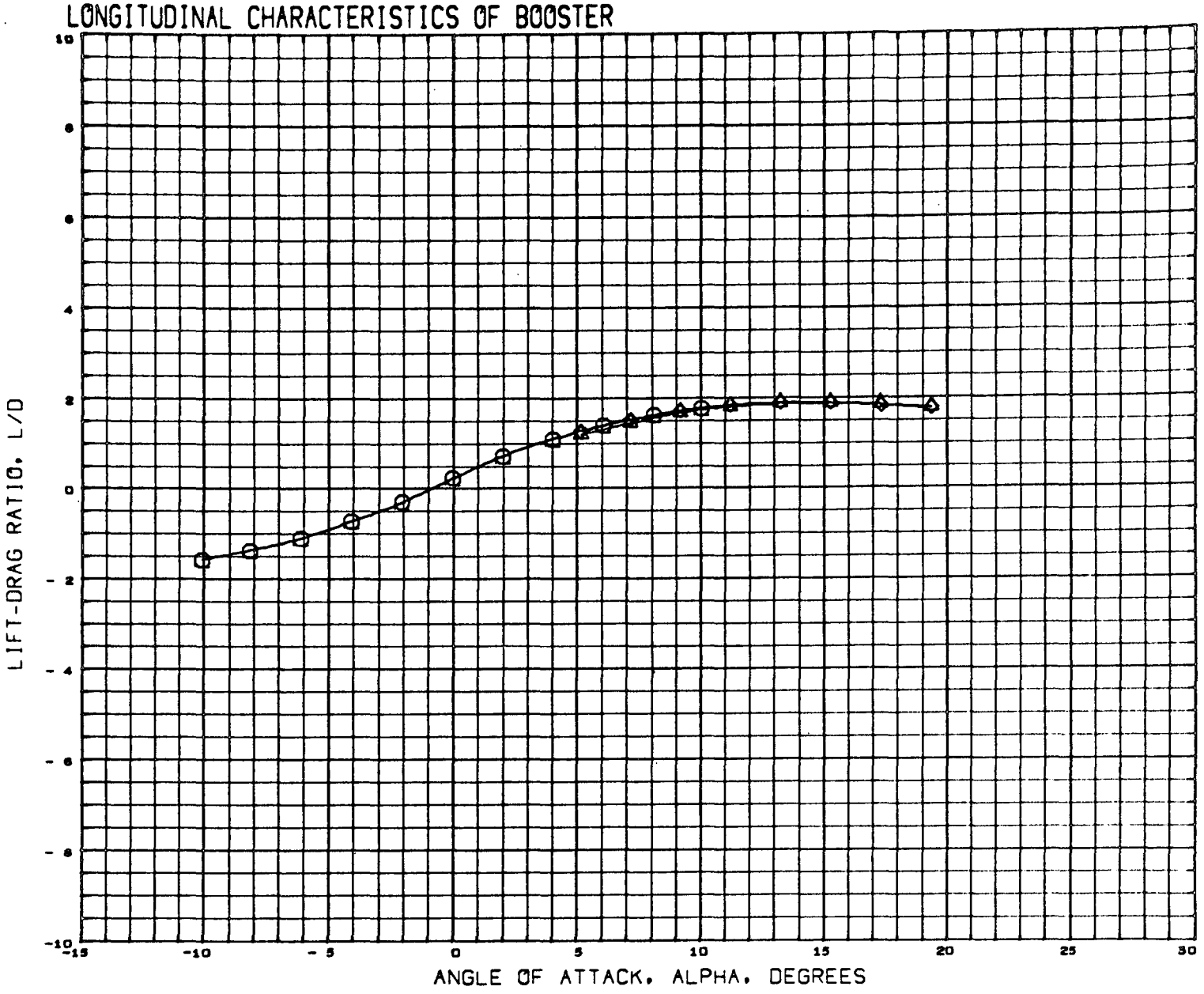


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M92D9A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M9205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M9297B)	◇	DATA NOT AVAILABLE FOR ALL CONDITIONS	0.000	10.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

LONGITUDINAL CHARACTERISTICS OF BOOSTER

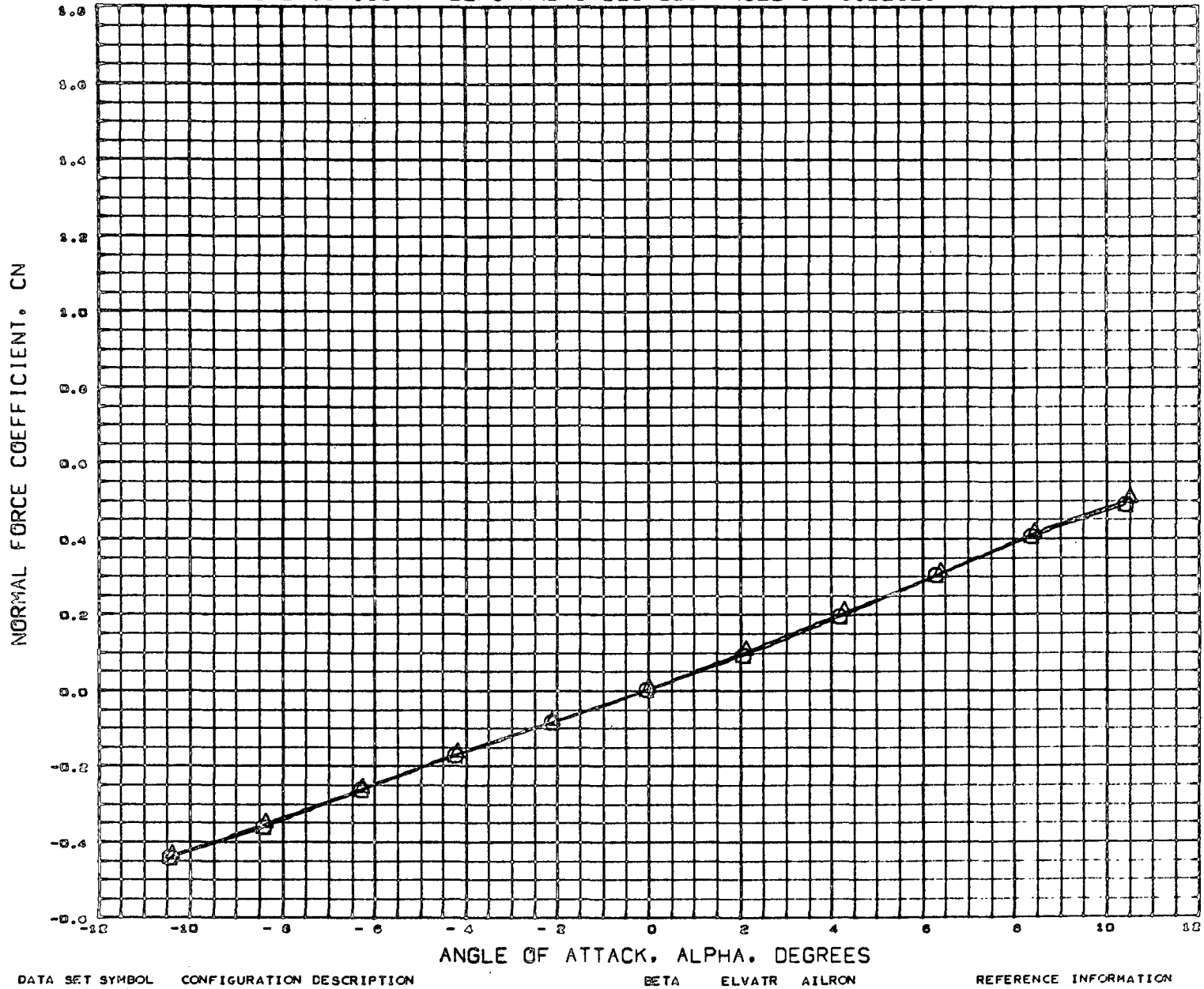


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(N3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3205B)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3257B)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	10.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

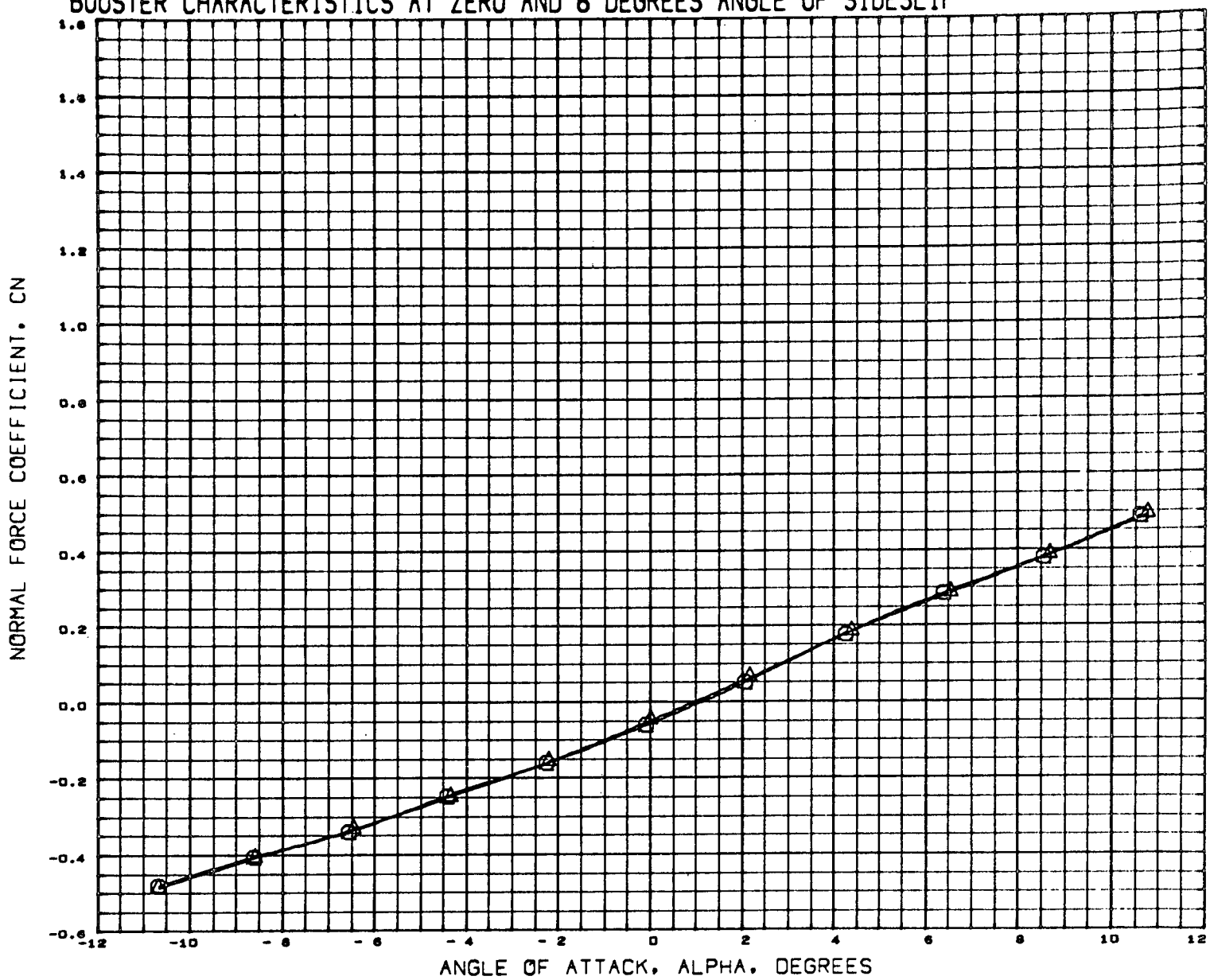


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.006

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

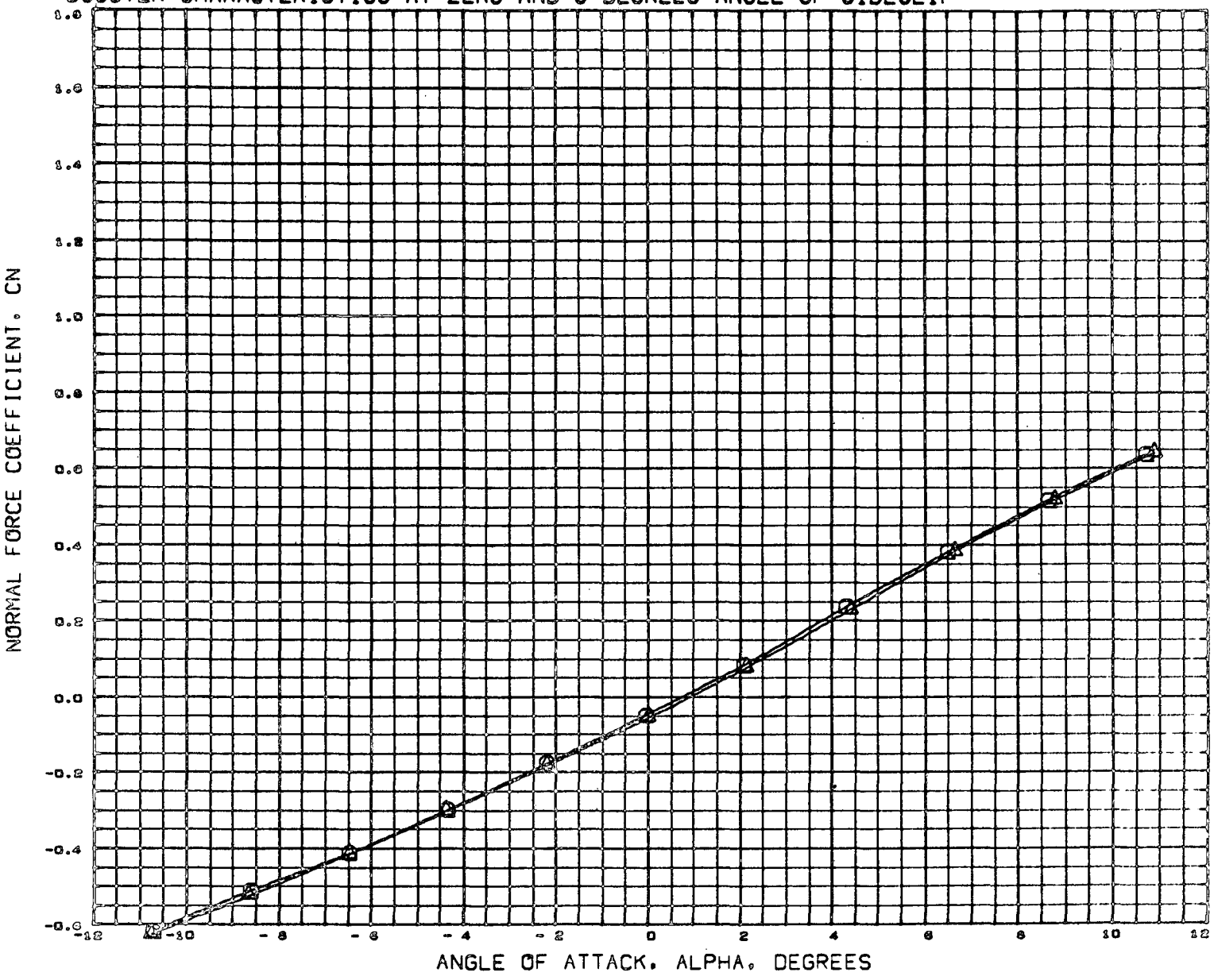


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

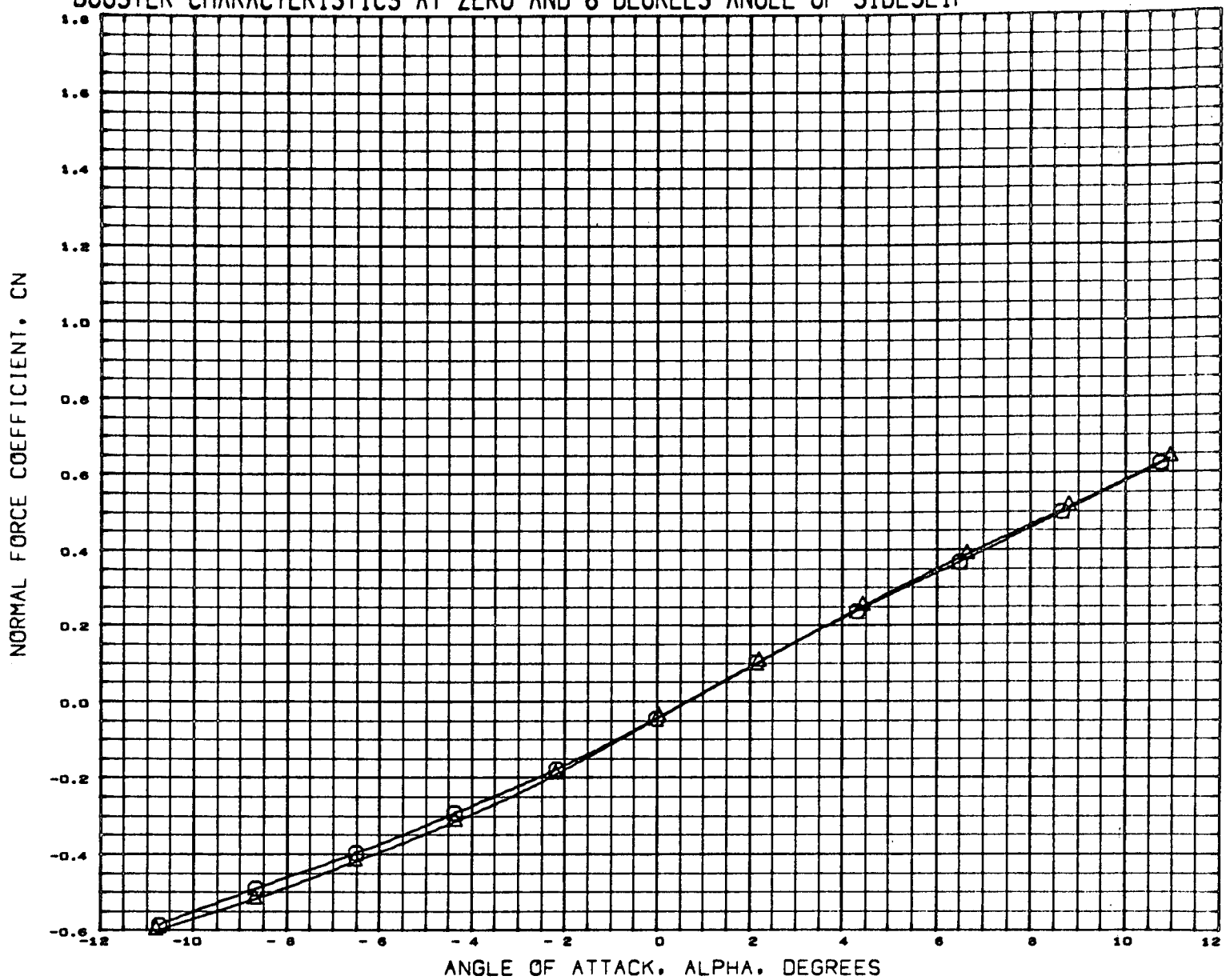


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

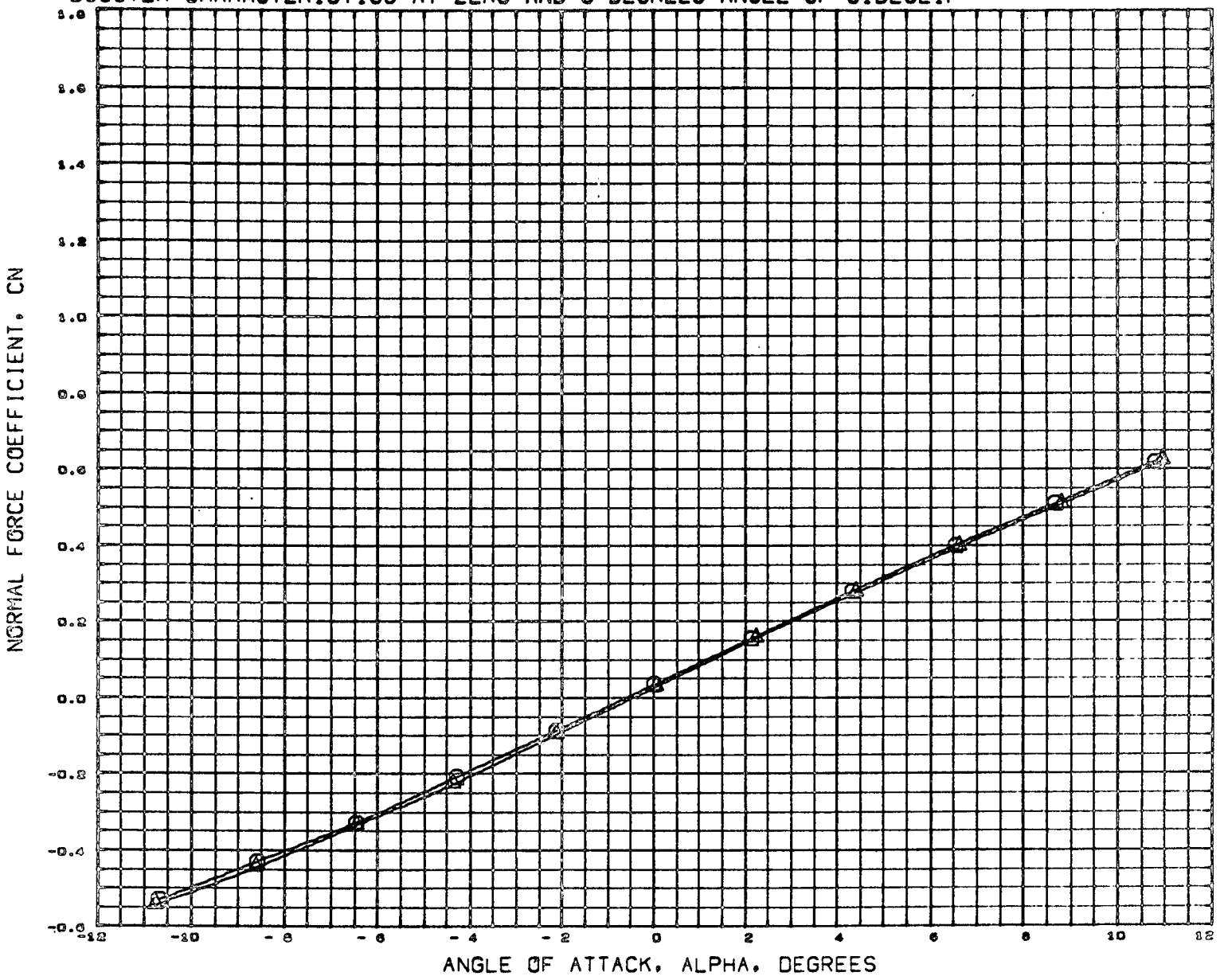


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

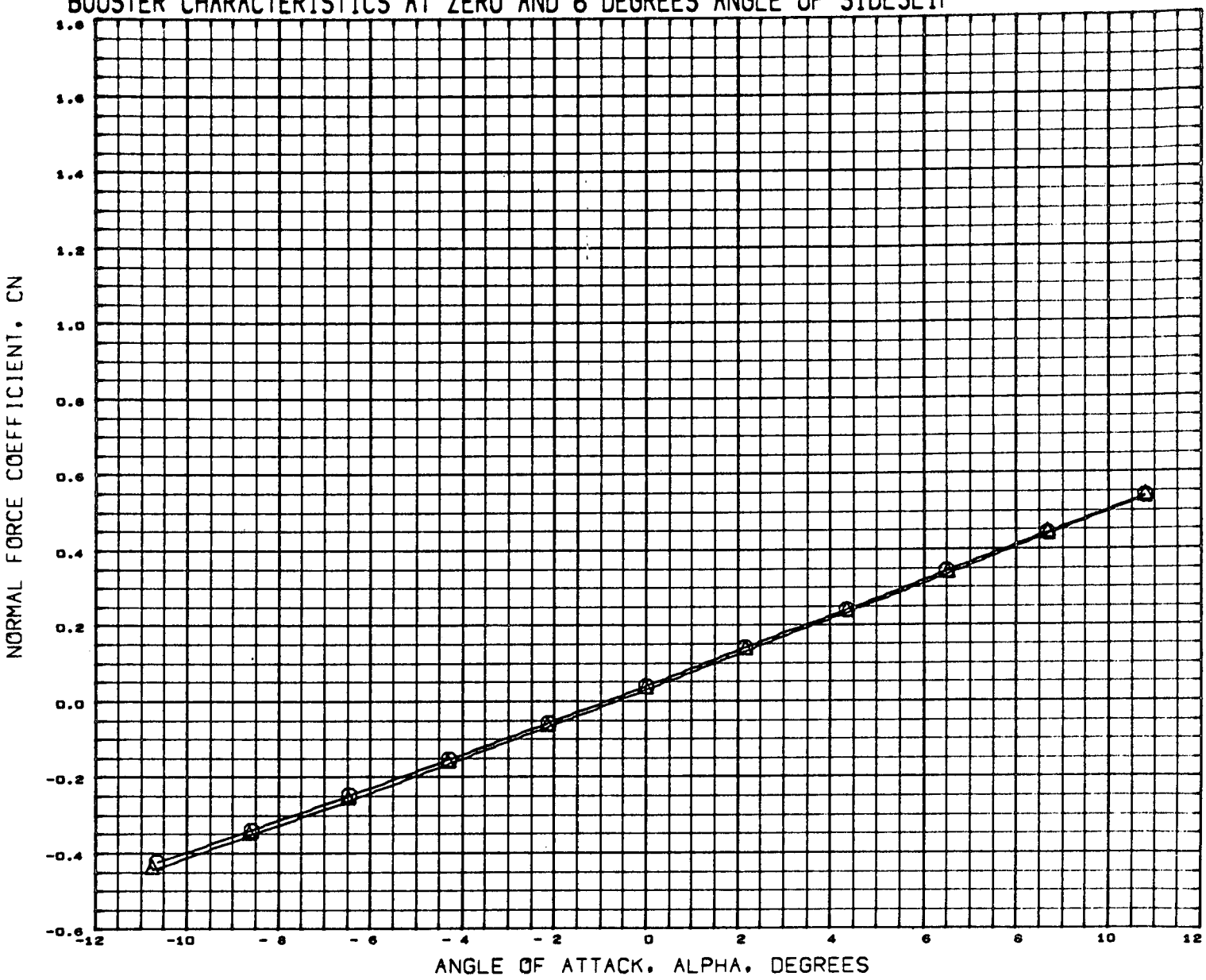


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

MACH 1.197

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



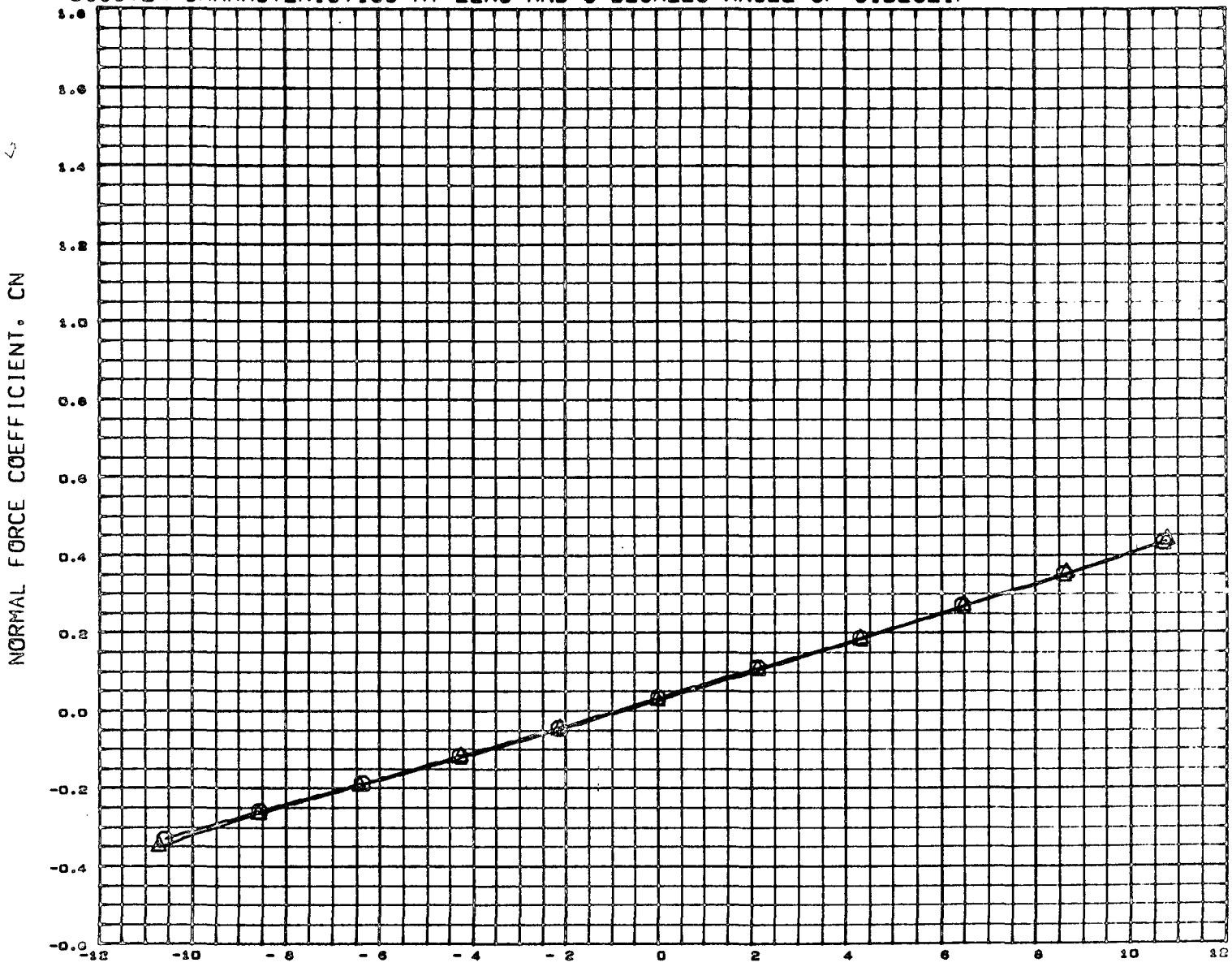
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

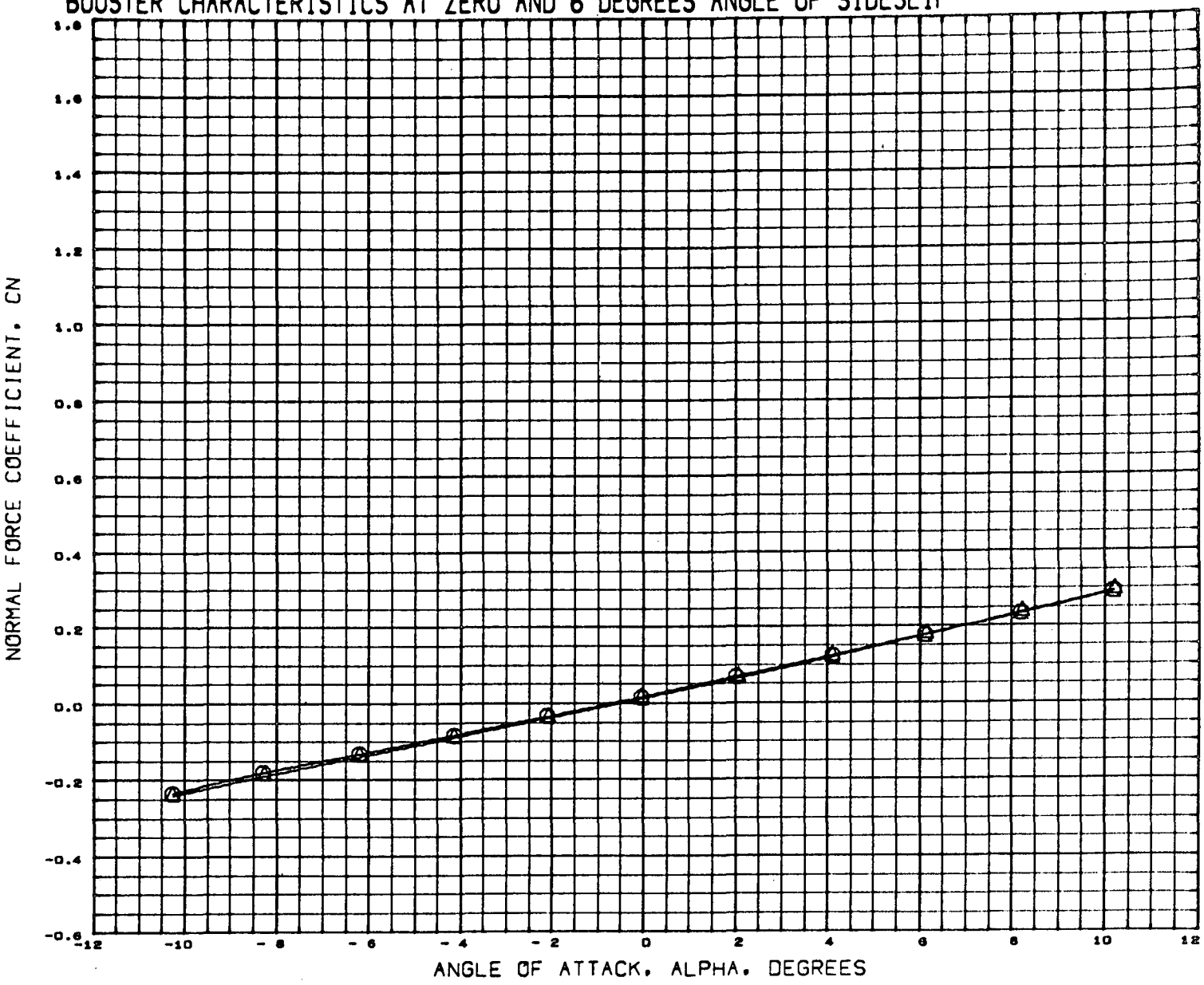


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

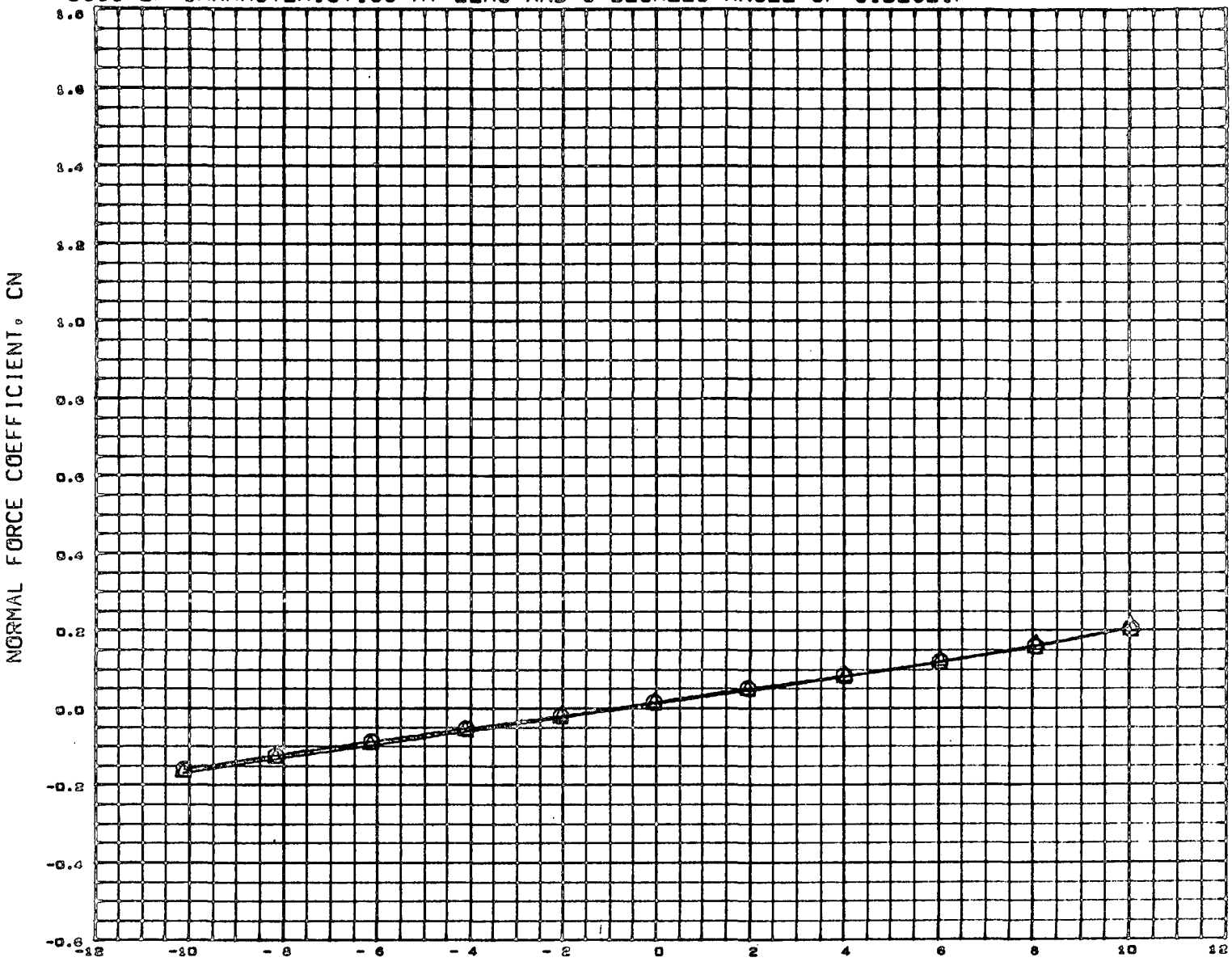


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

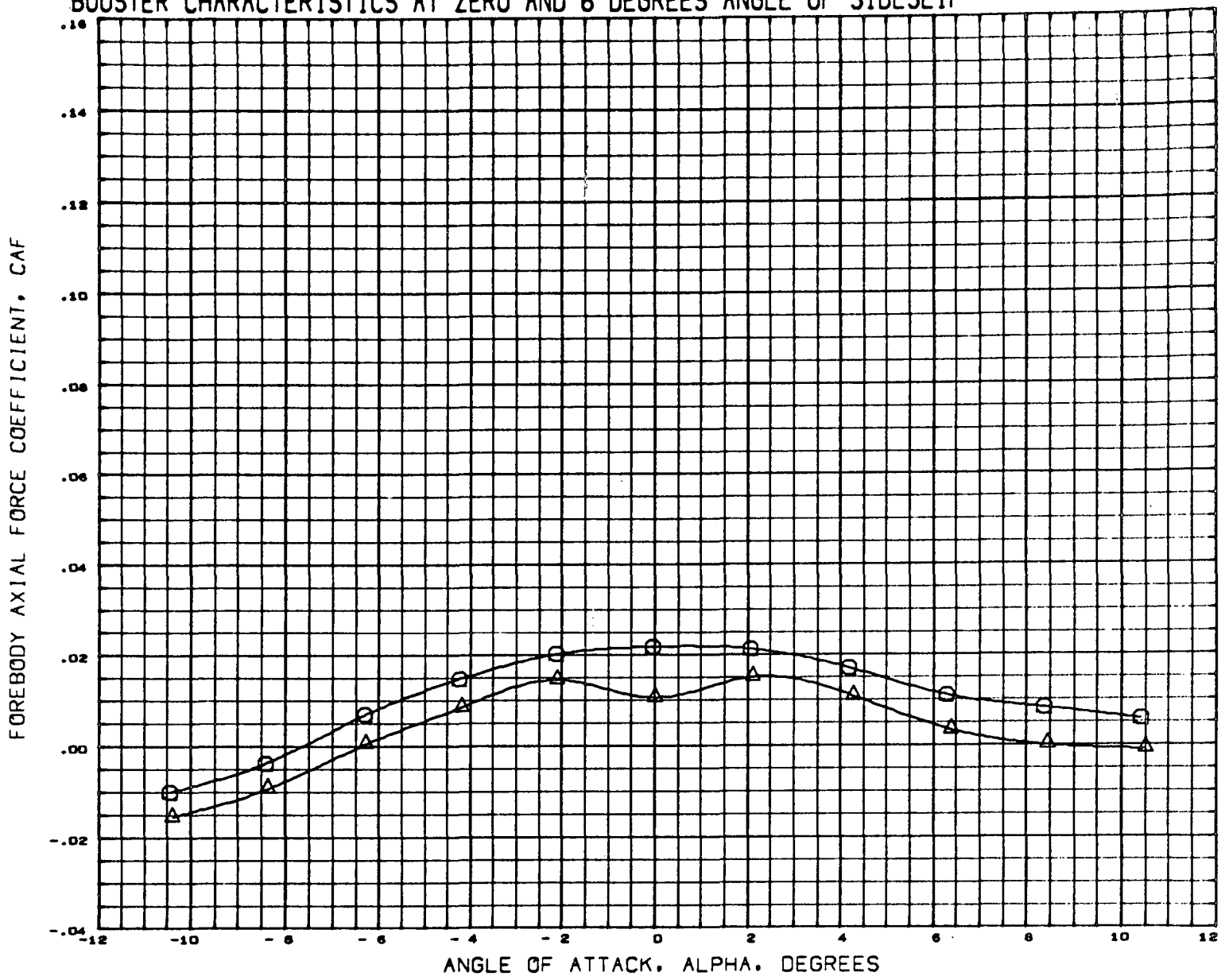


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3209A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

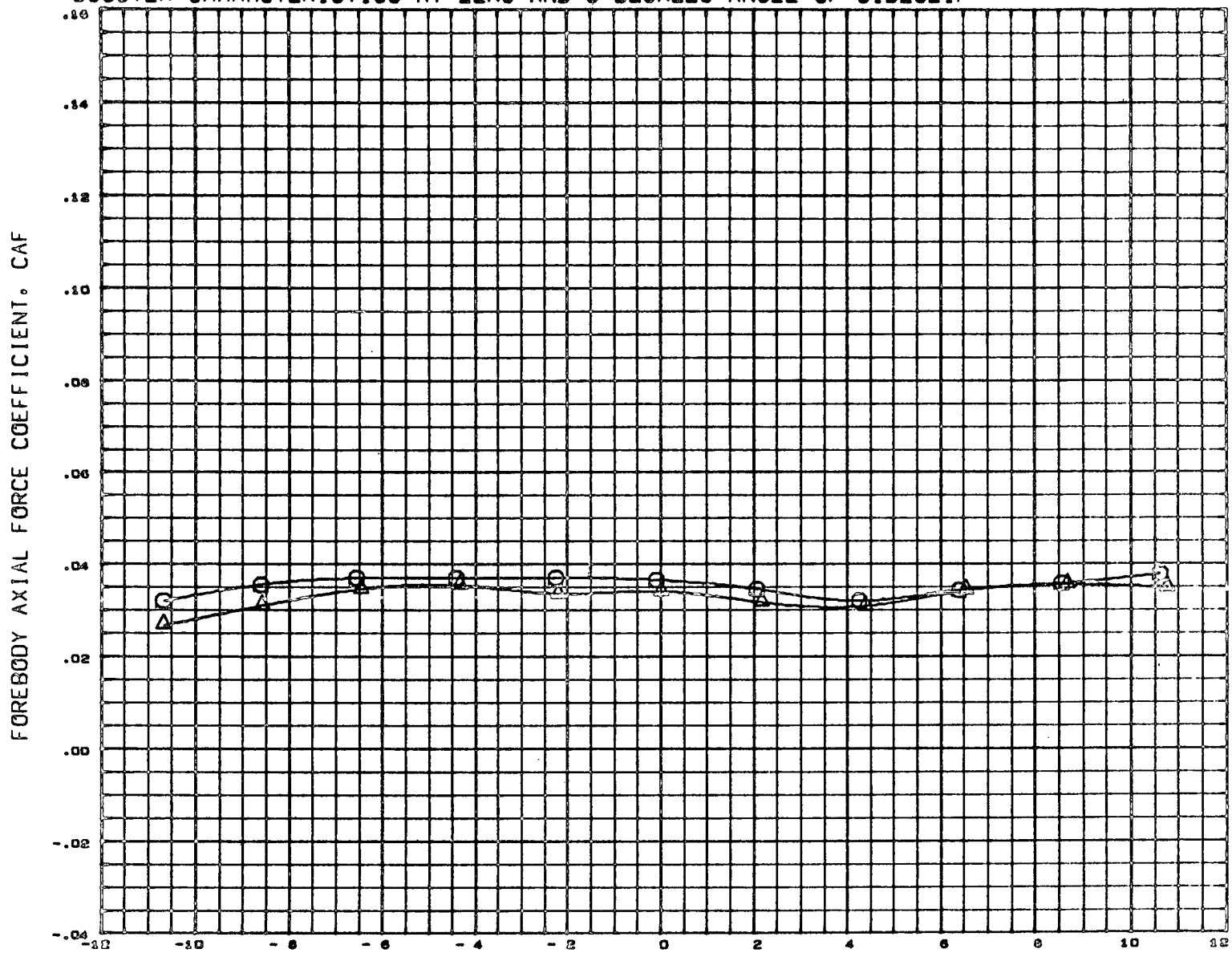


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

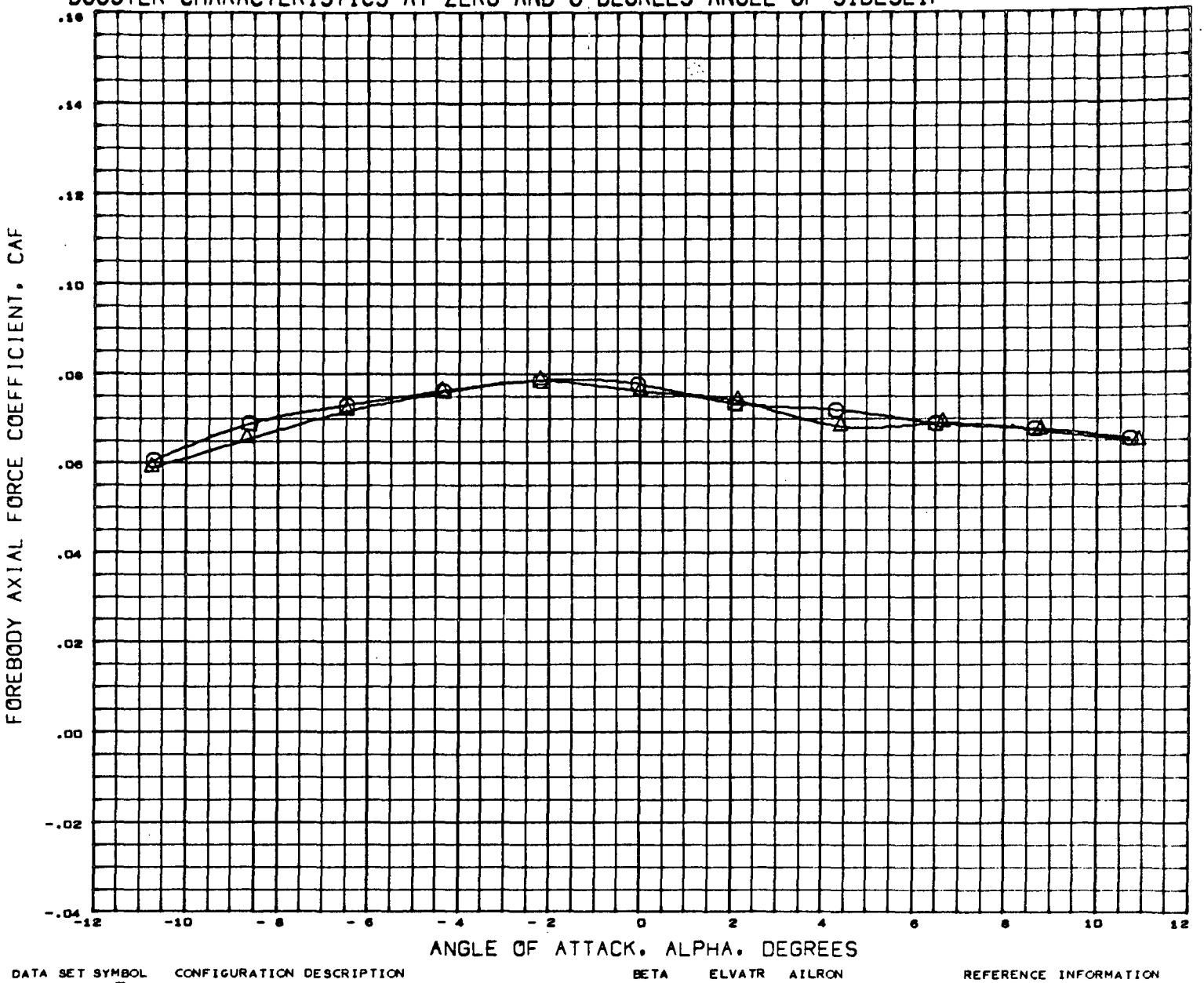


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	M9FC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3207A)	△	M9FC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

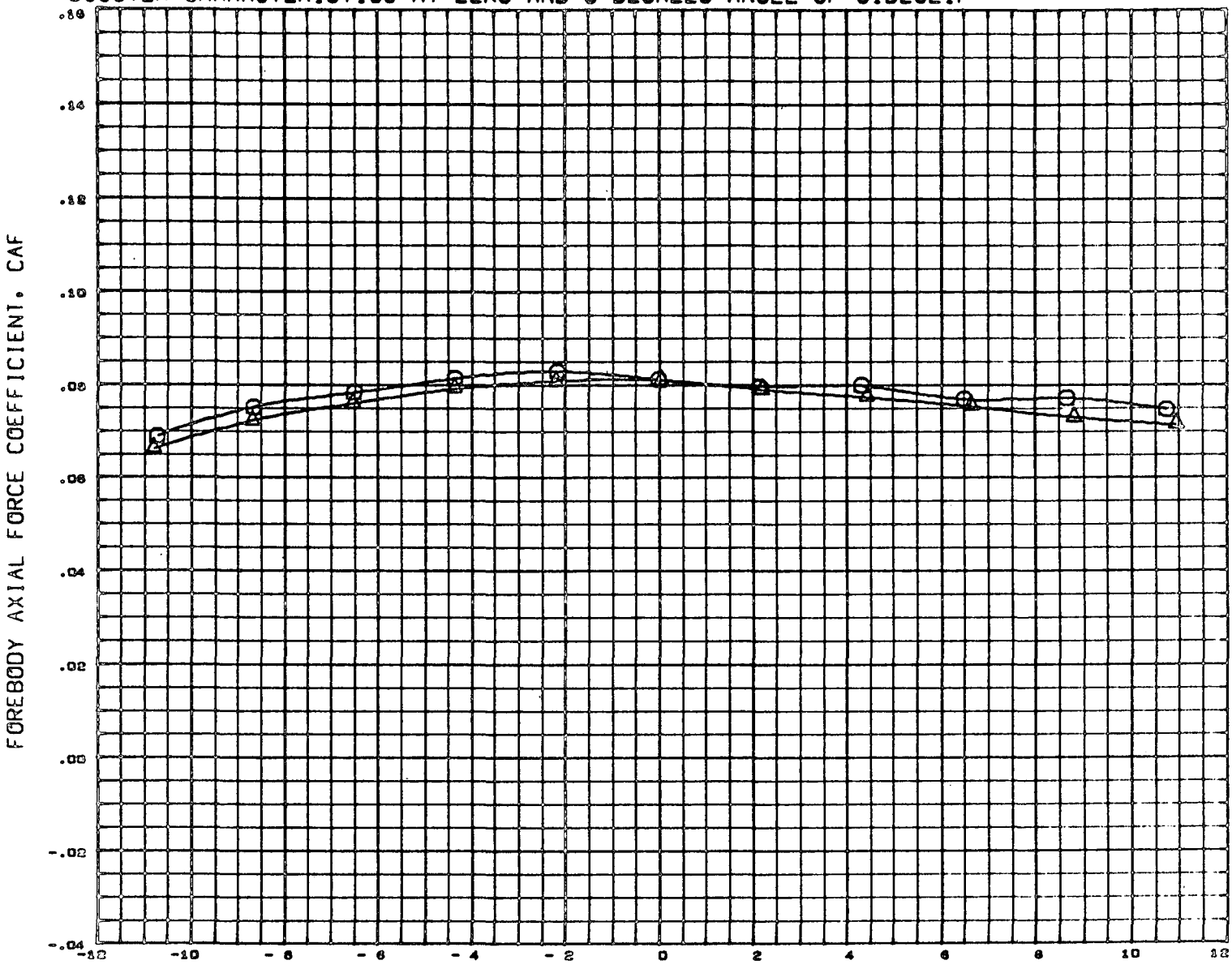


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

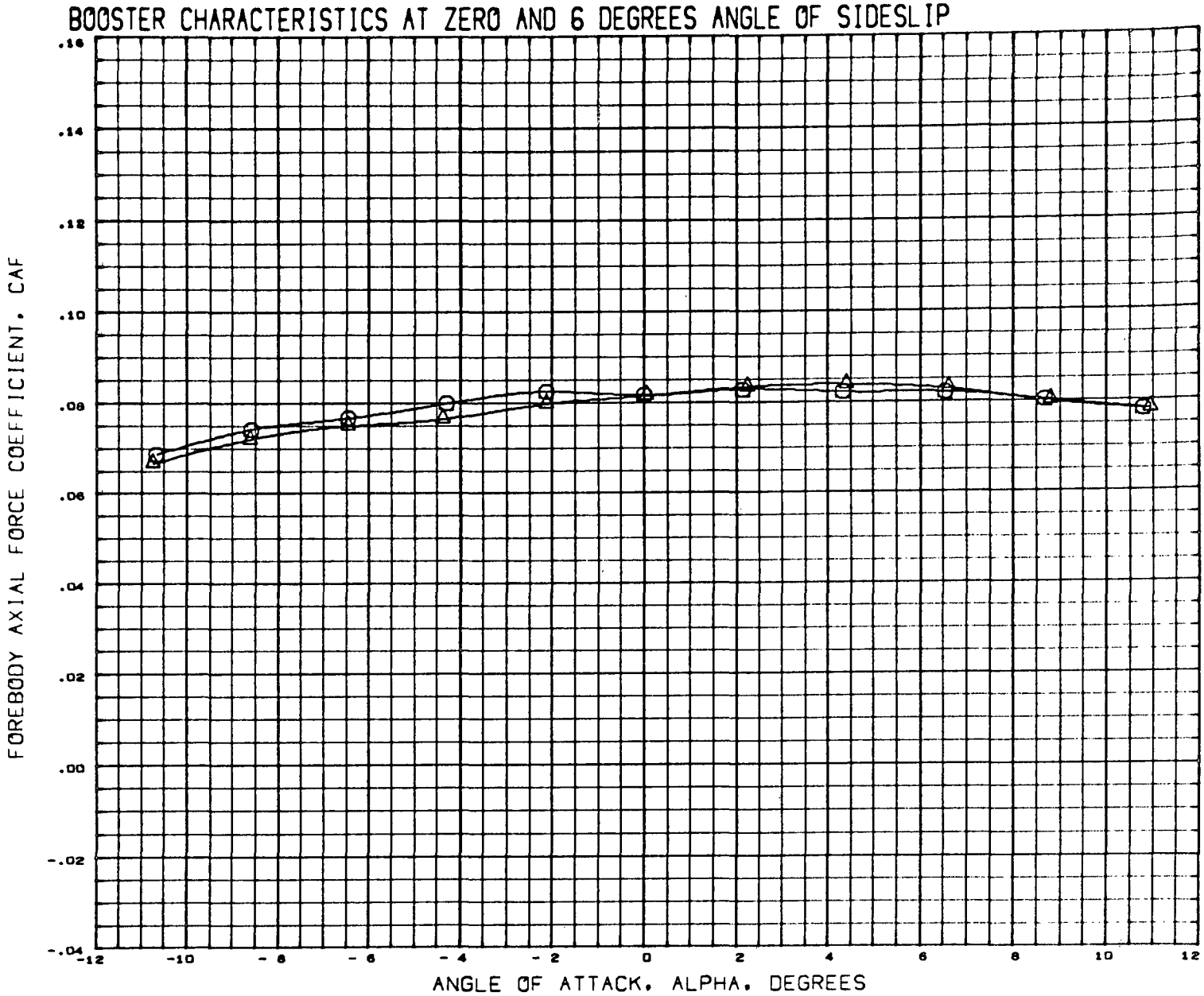


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

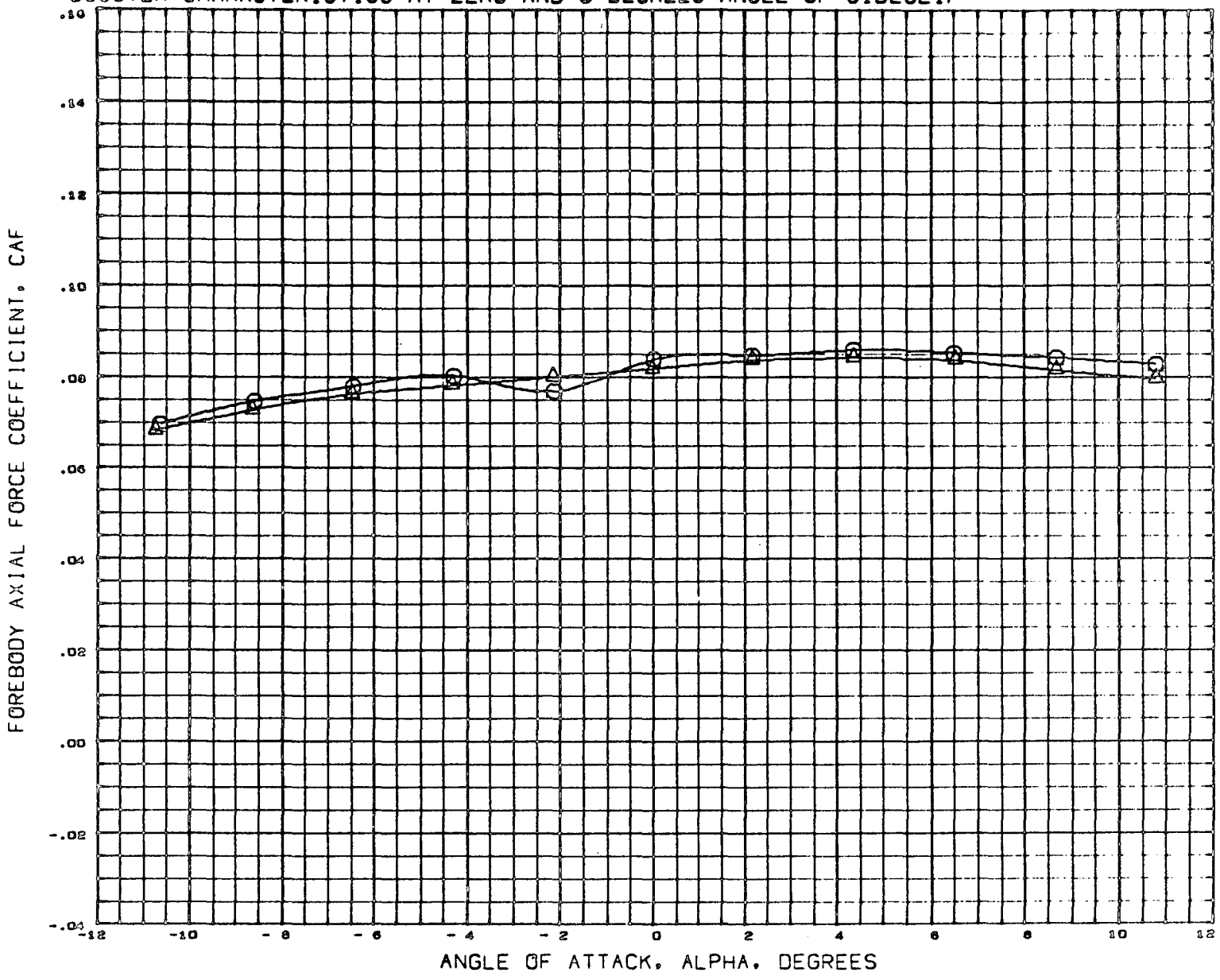


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



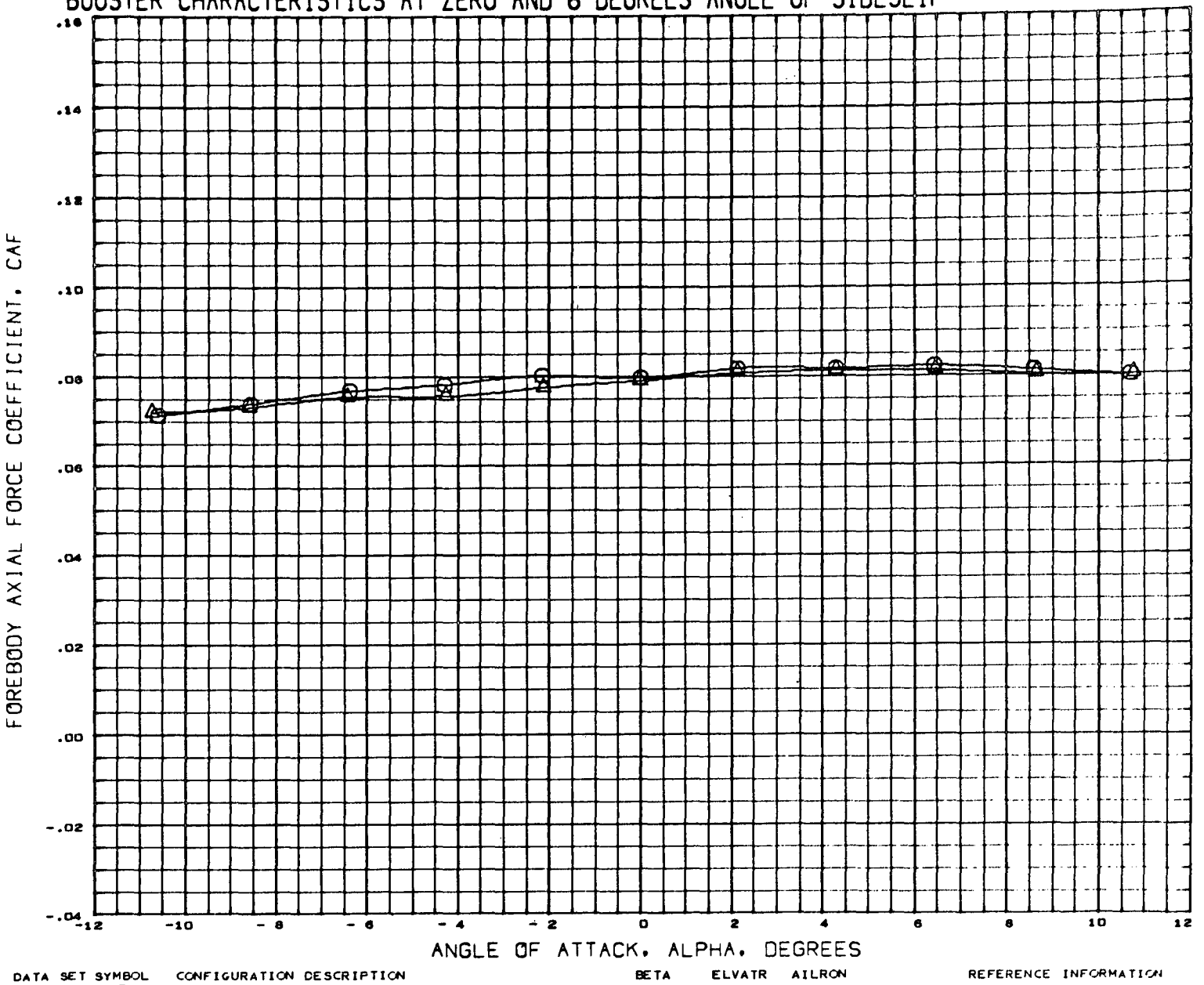
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(K3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

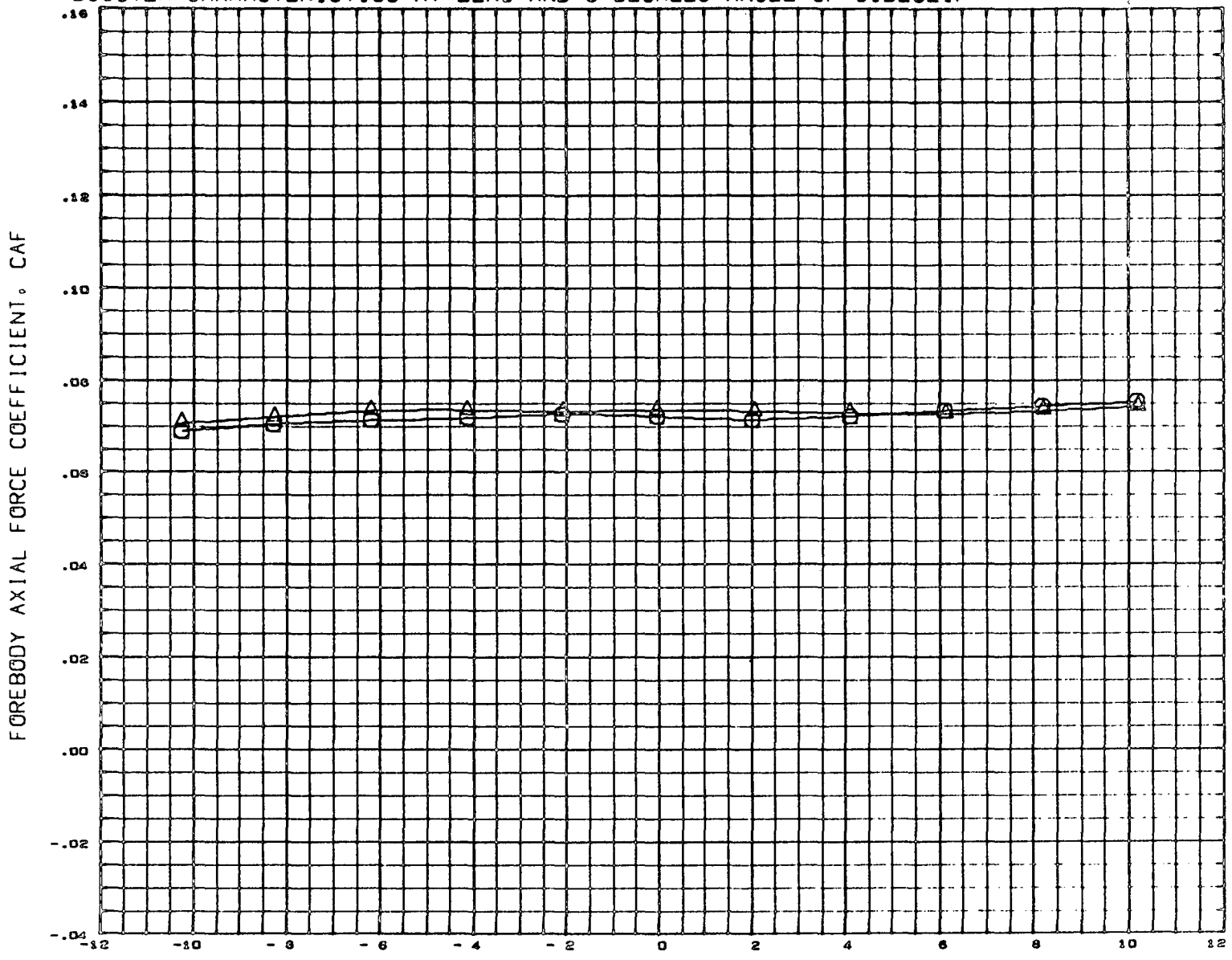


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

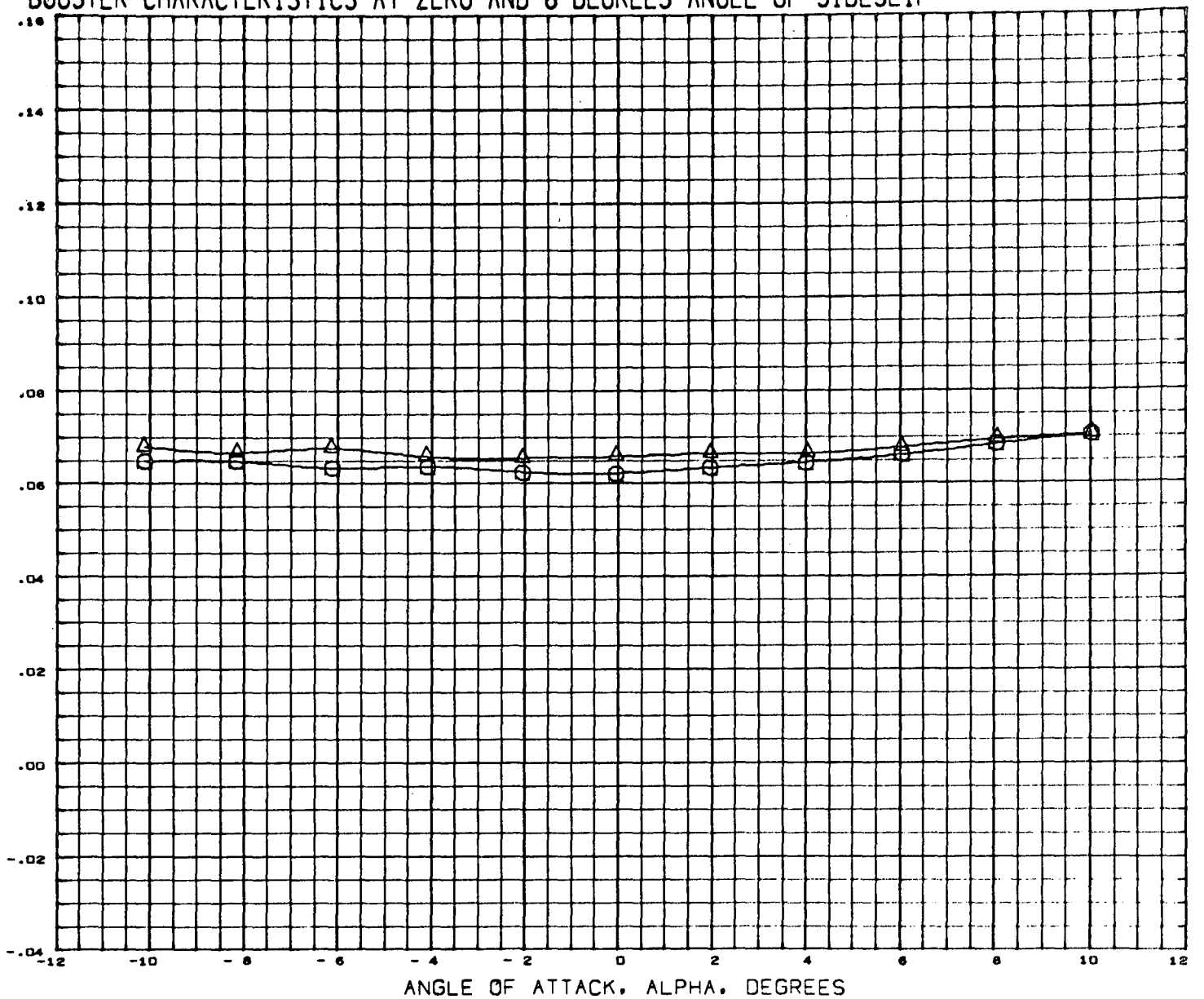


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		M9FC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		M9FC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

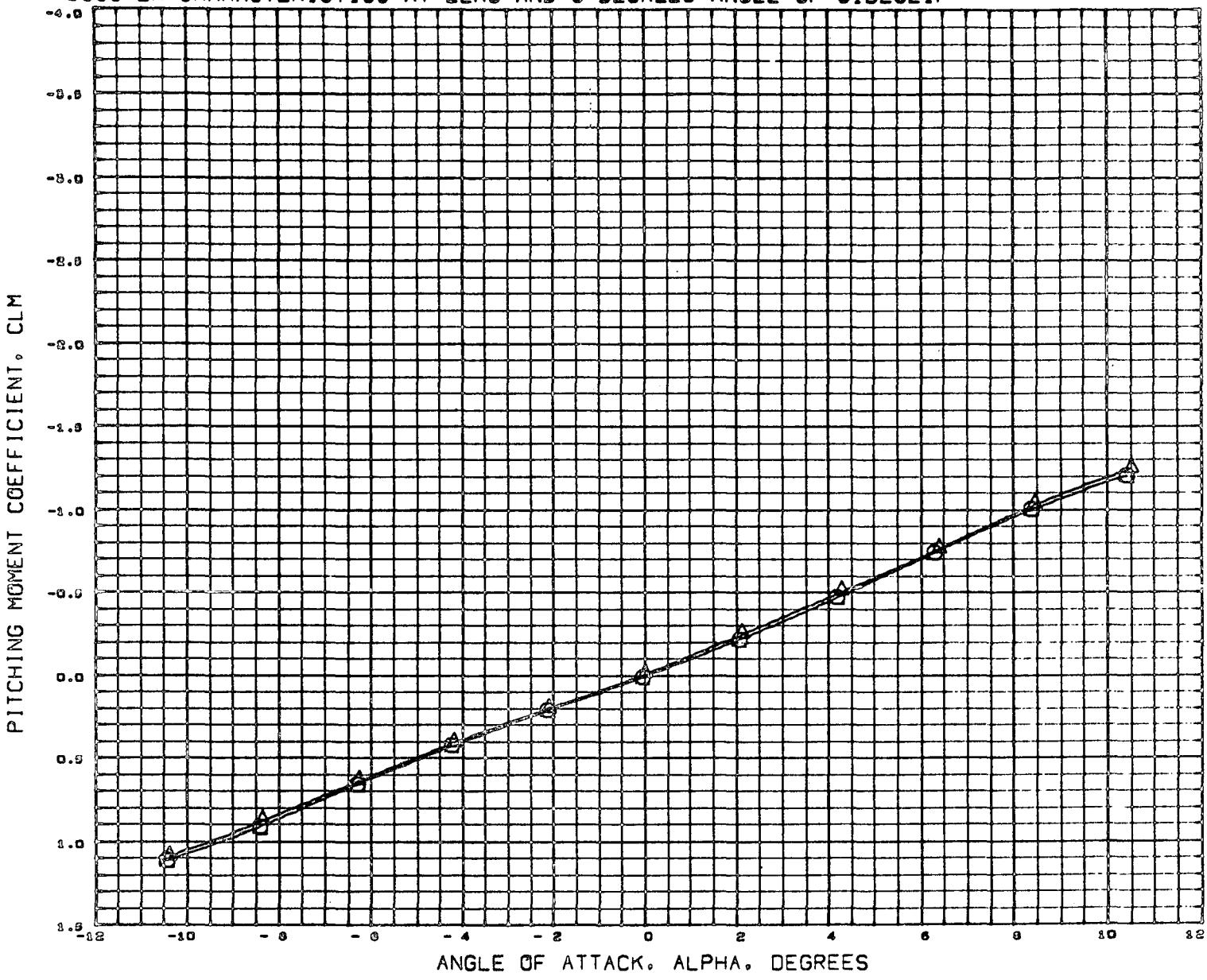


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



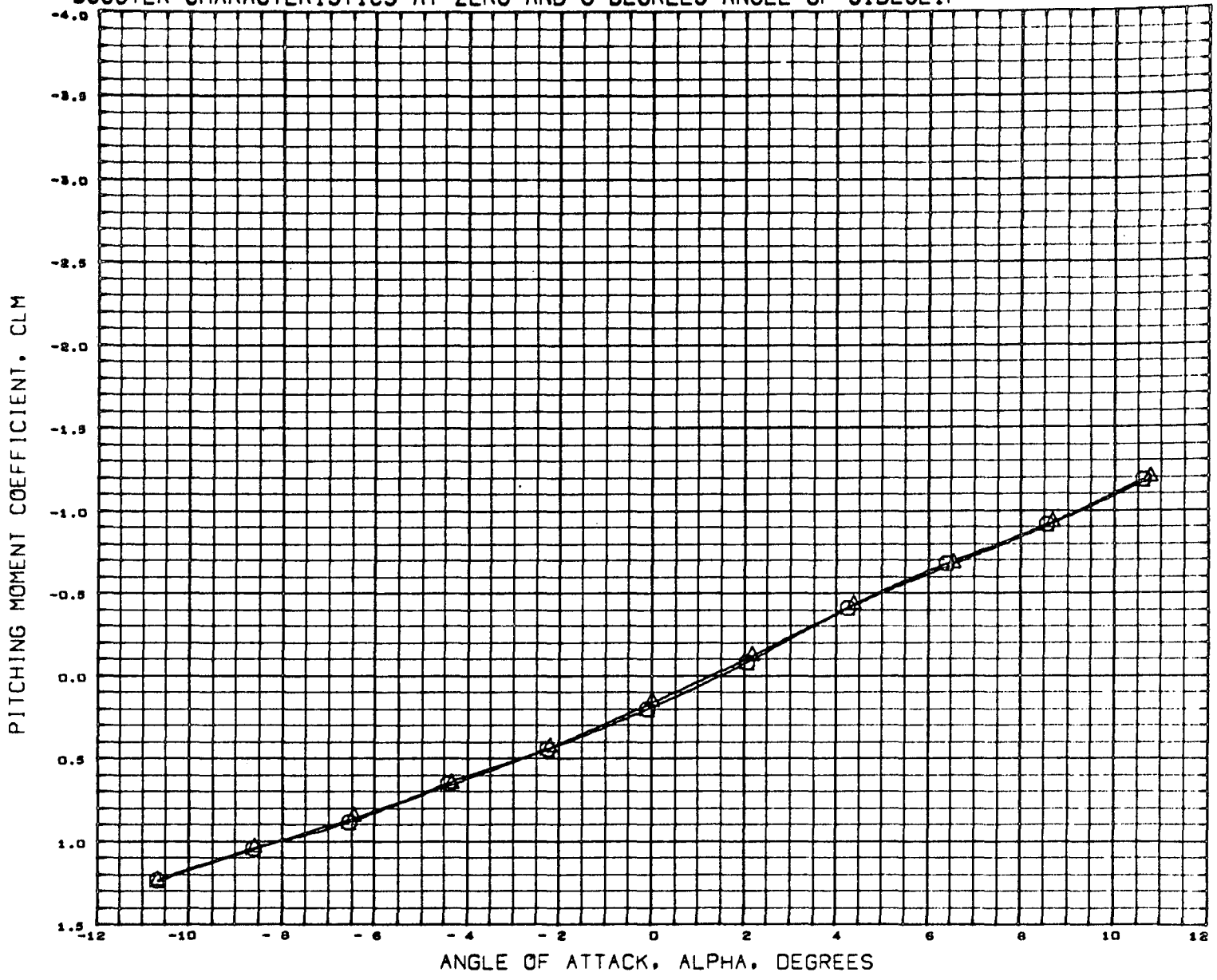
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION

SREF	15.6960	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

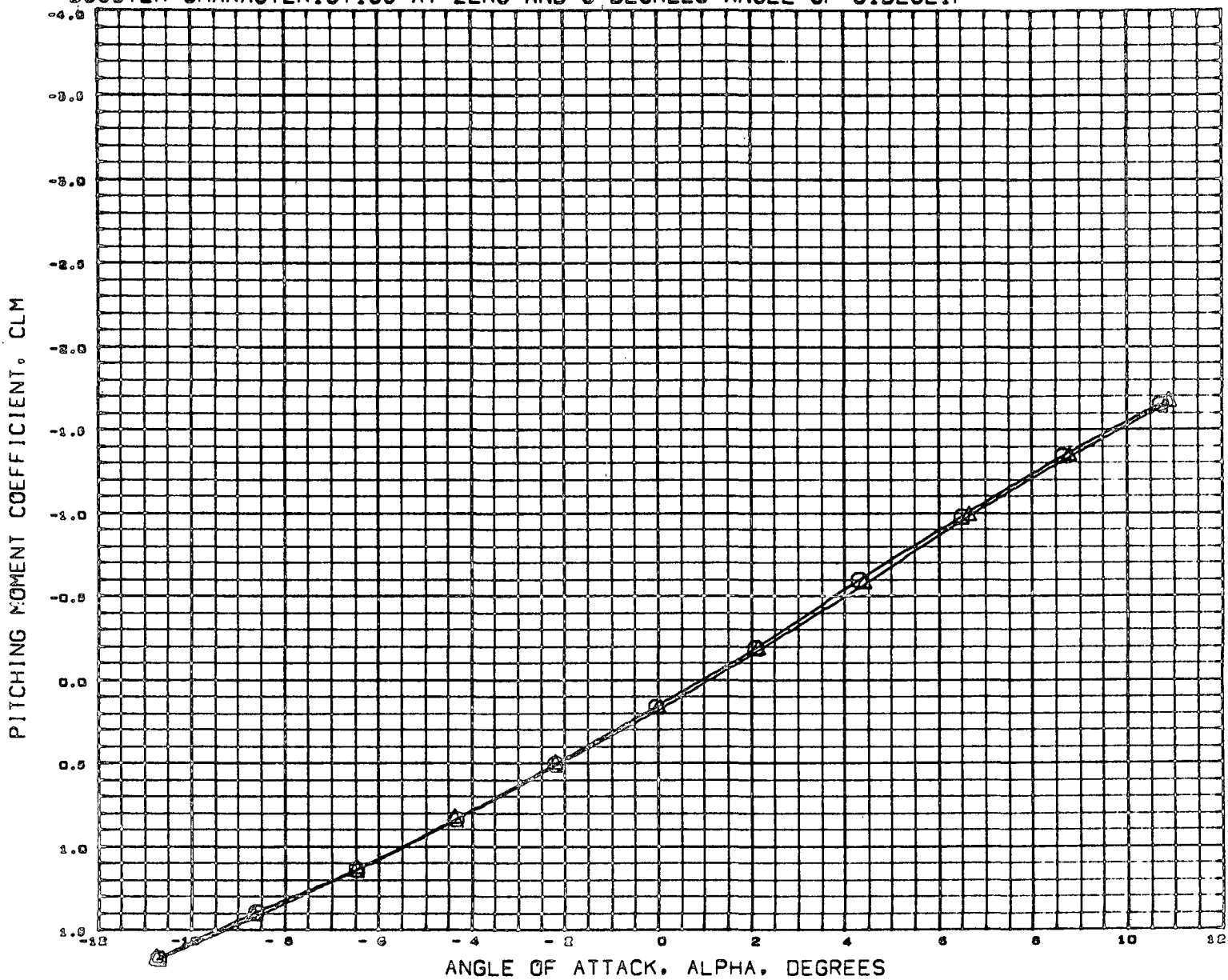


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

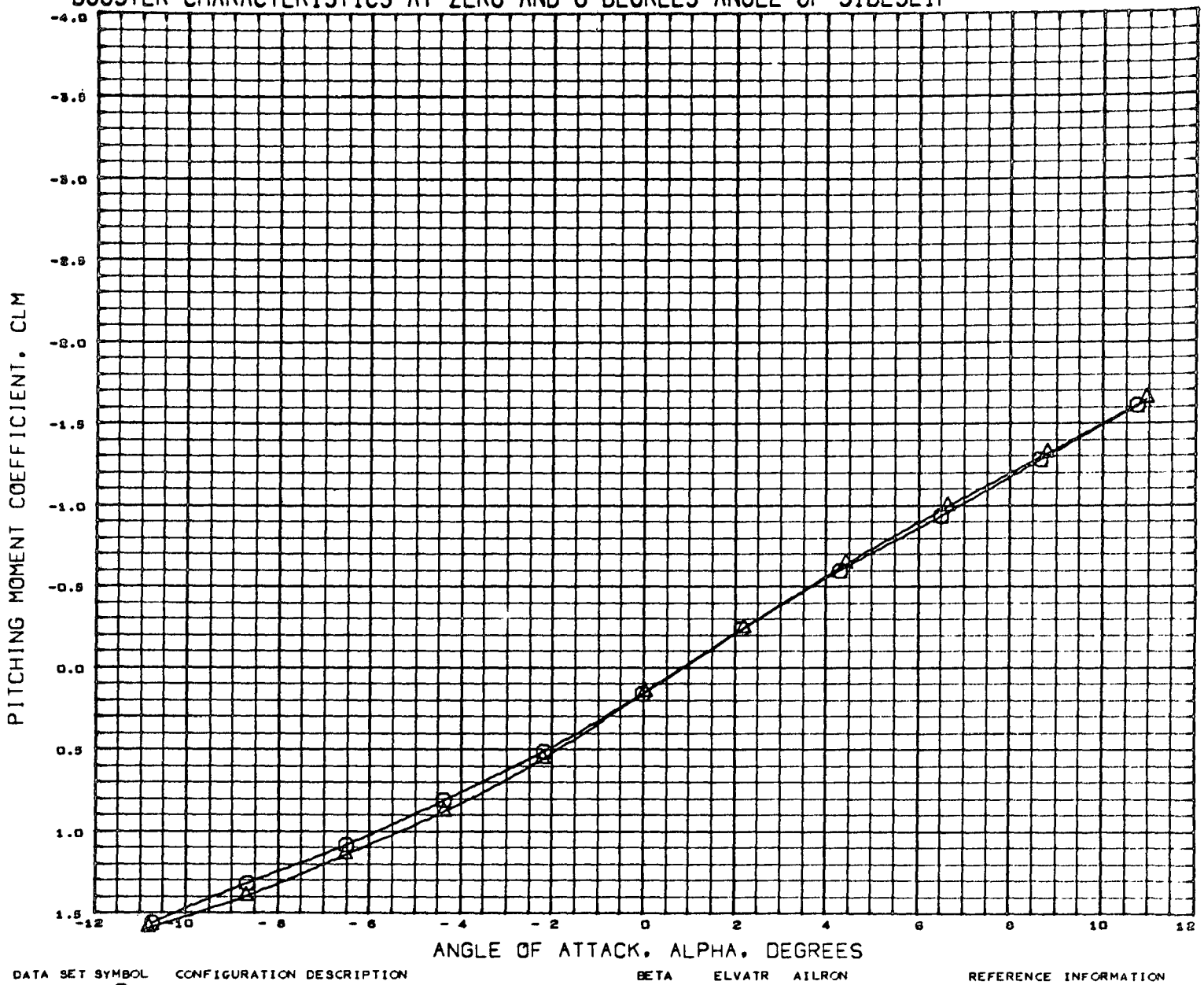


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3207A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

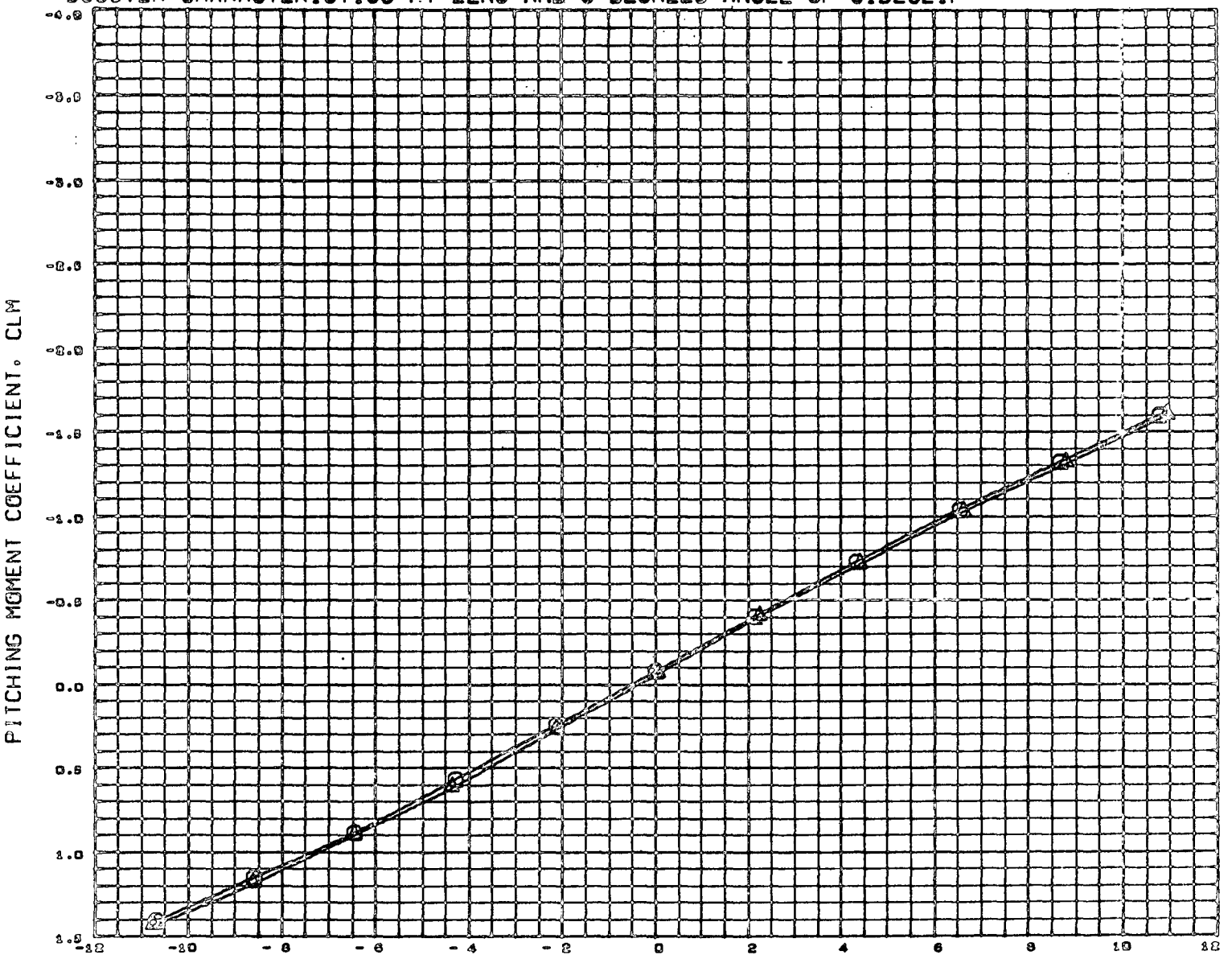


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



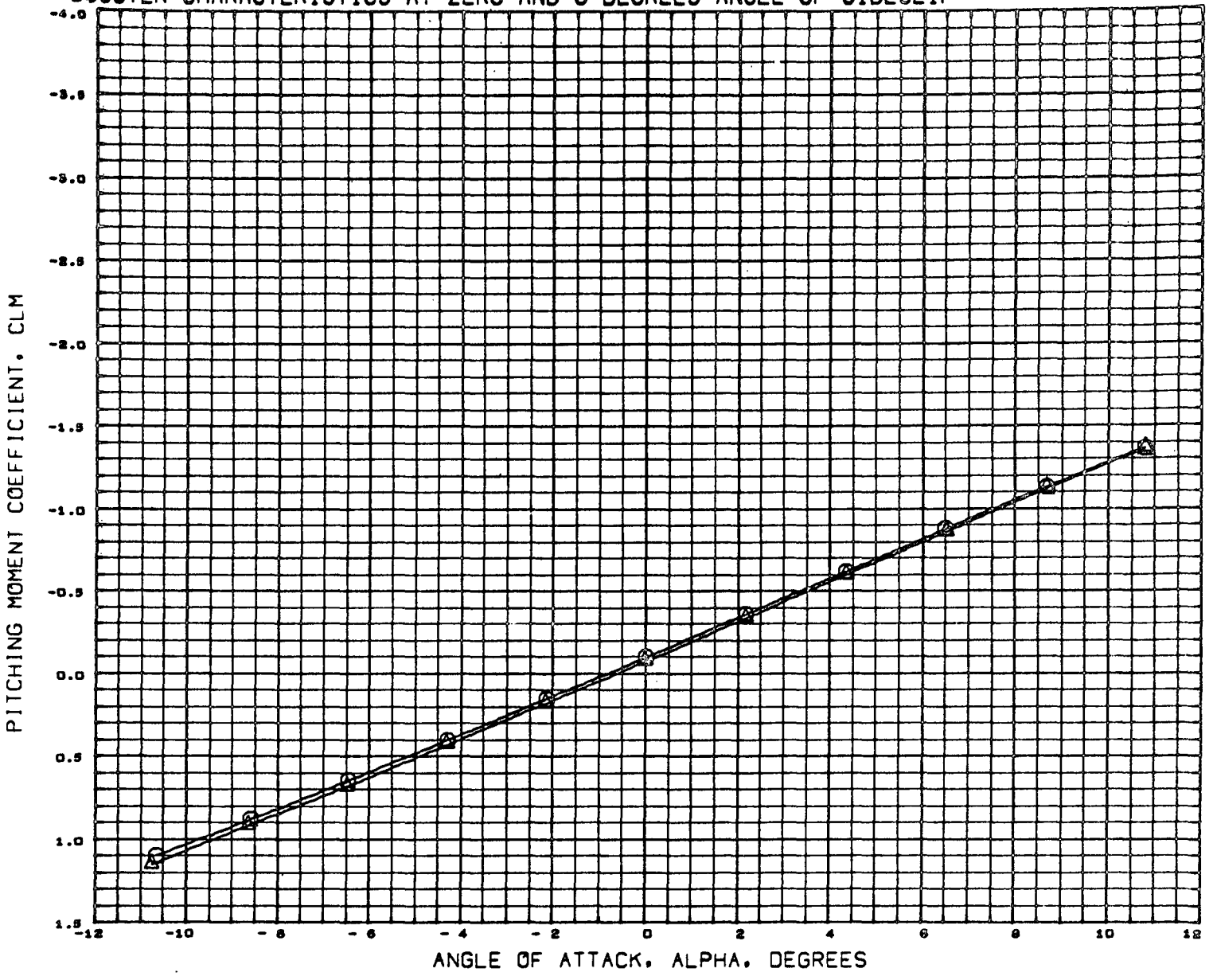
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V0	0.000	0.000	0.000
(M3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V0	6.000	0.000	0.000

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0099	SCALE

MACH 1.197

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

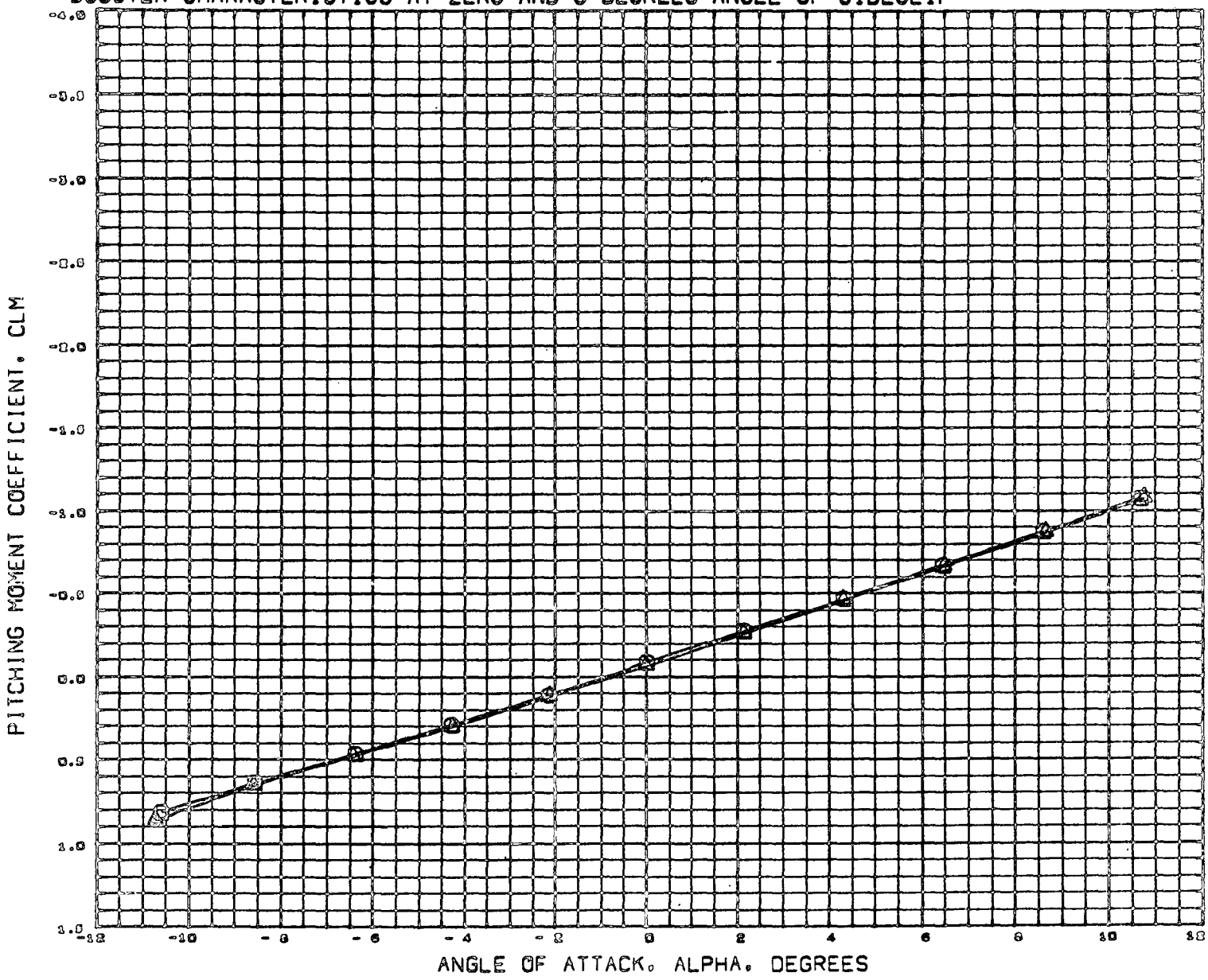


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

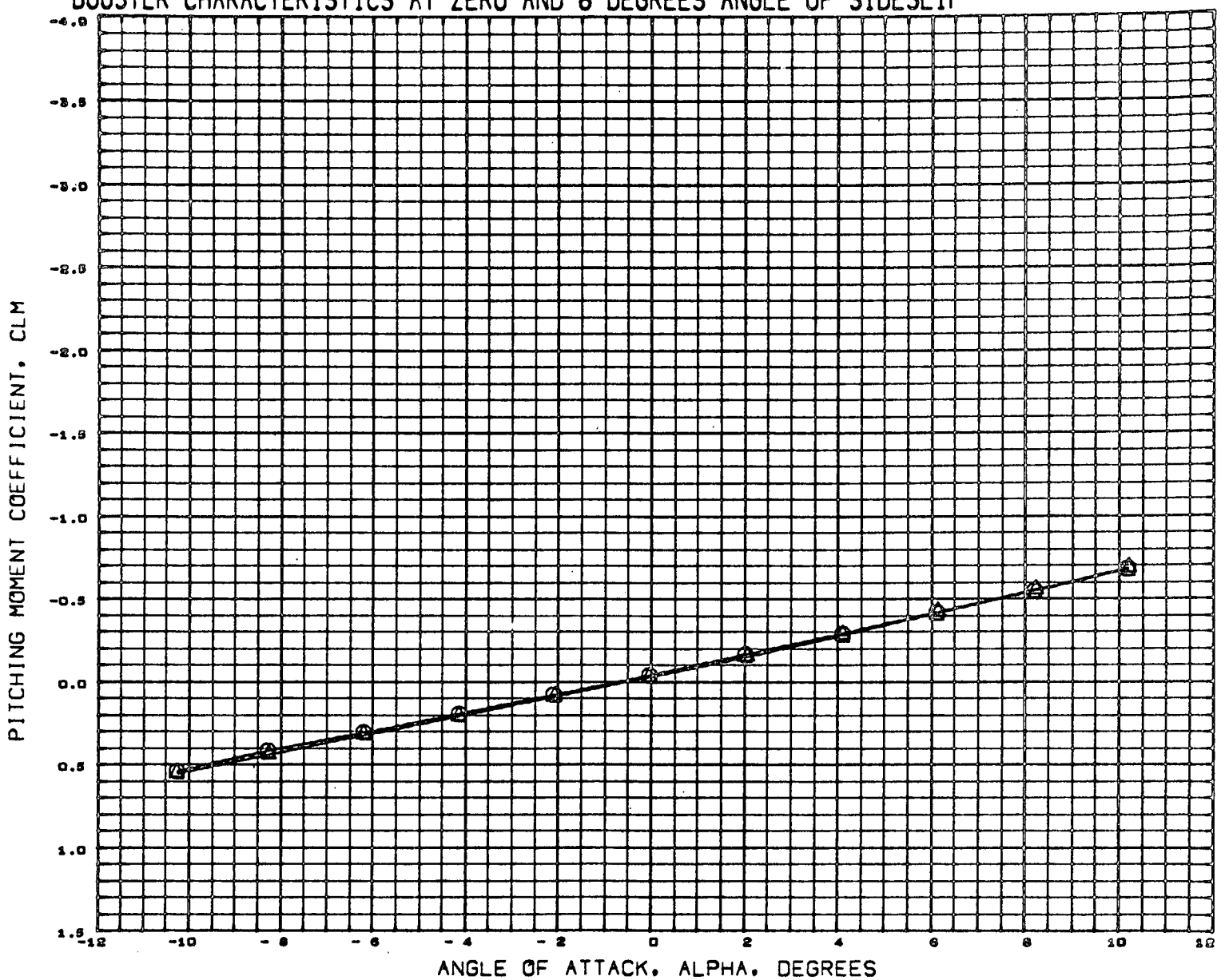


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M9209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M9207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	19.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

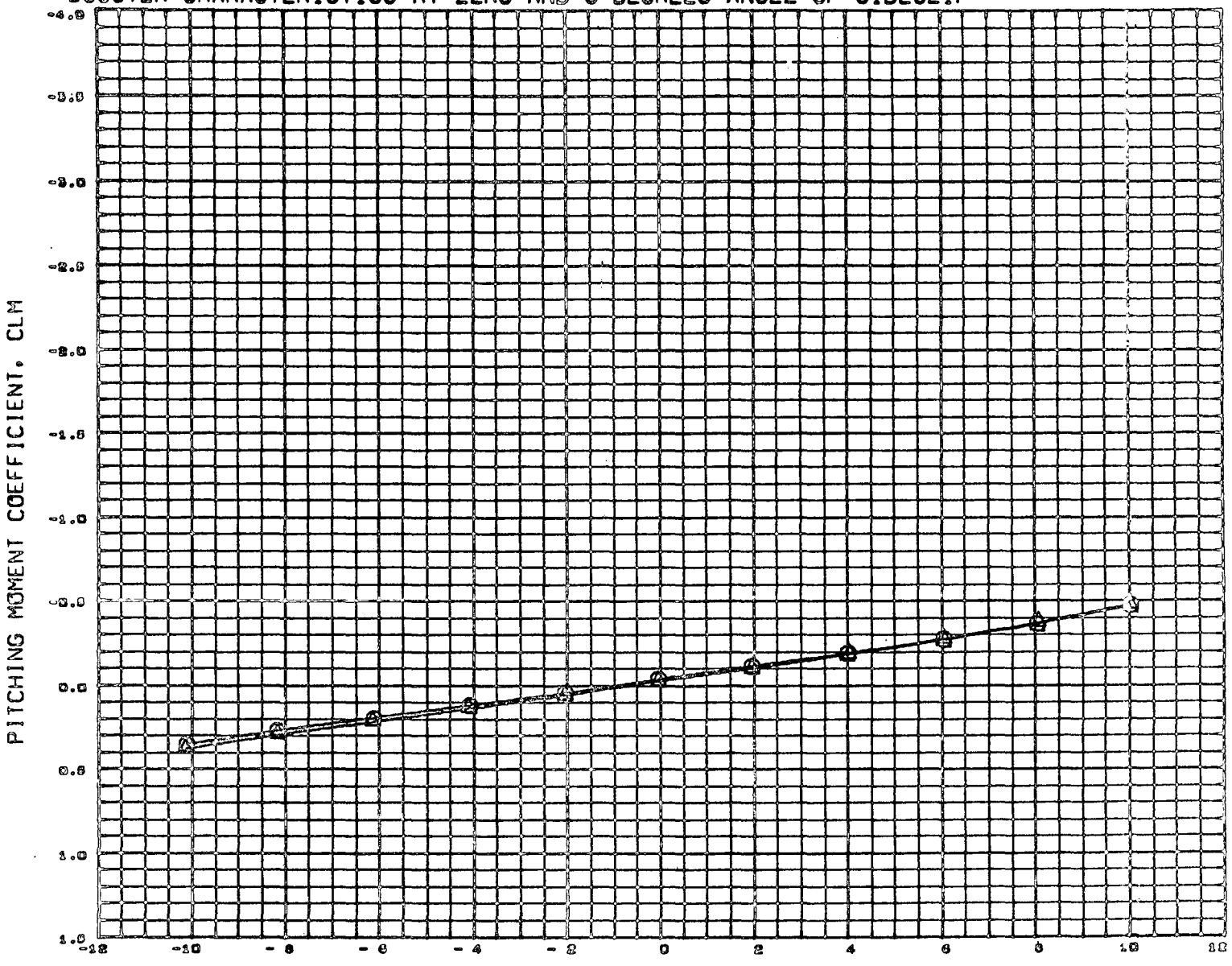


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

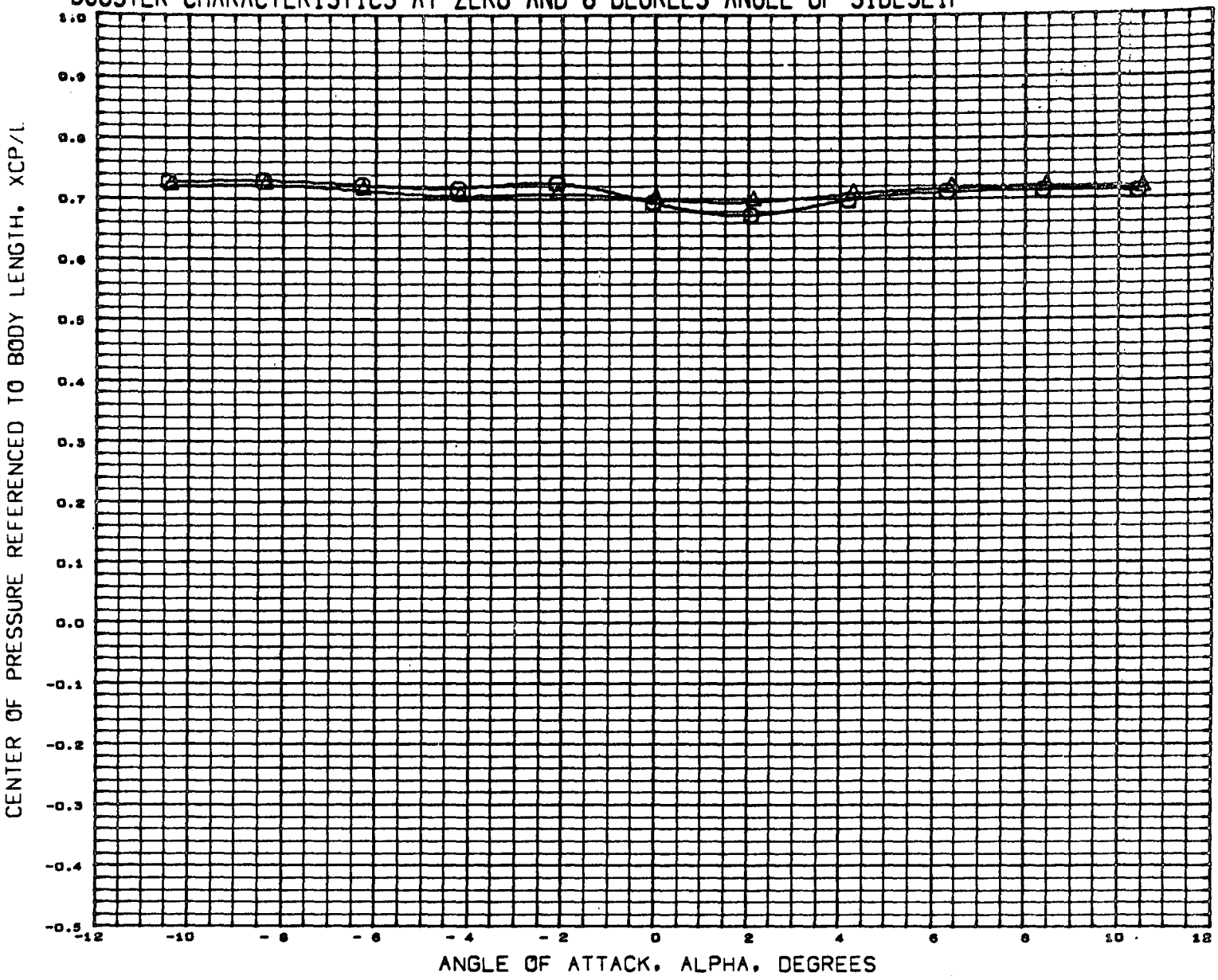


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(MJ209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V0	0.000	0.000	0.000
(MJ207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V6	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	30 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

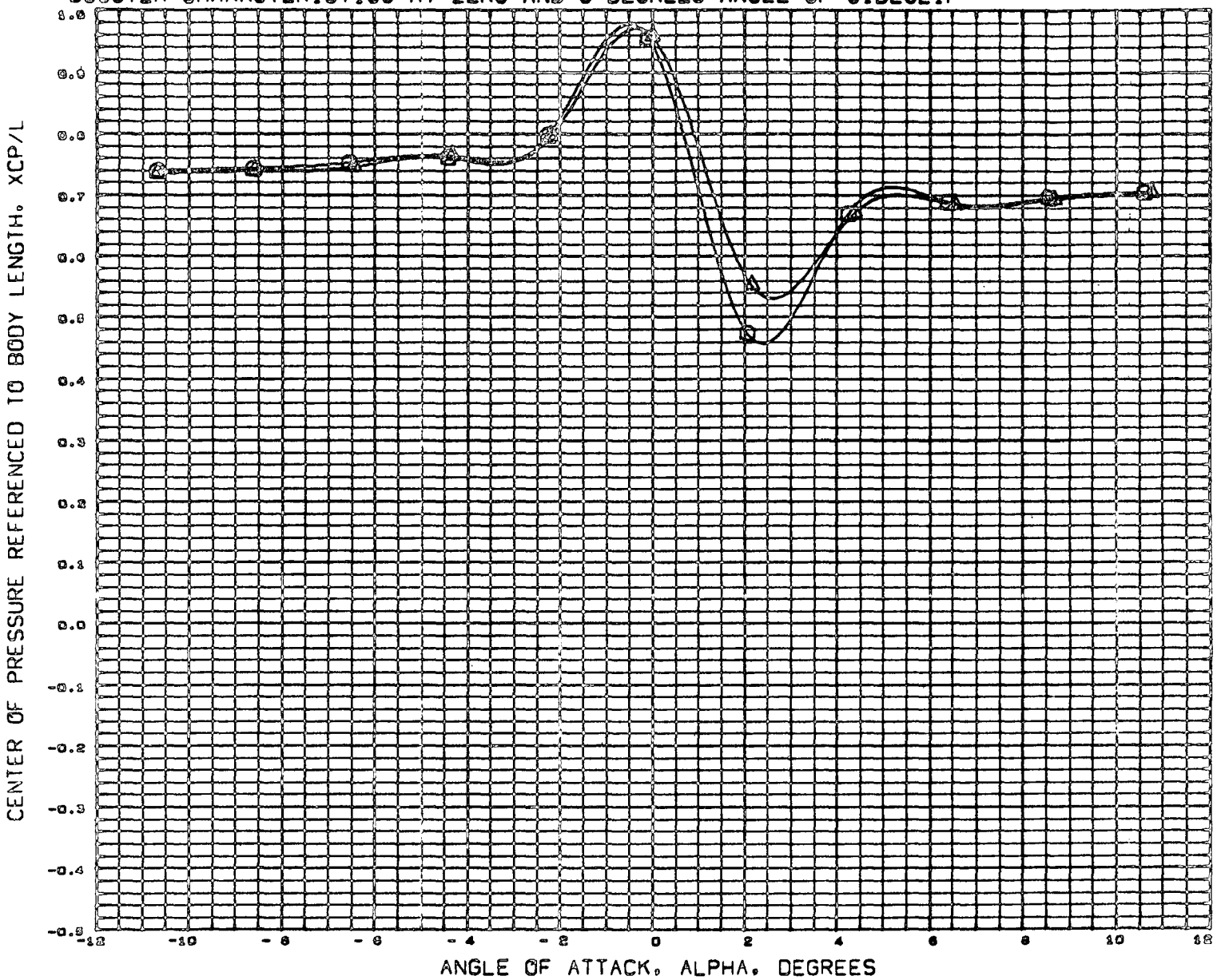


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

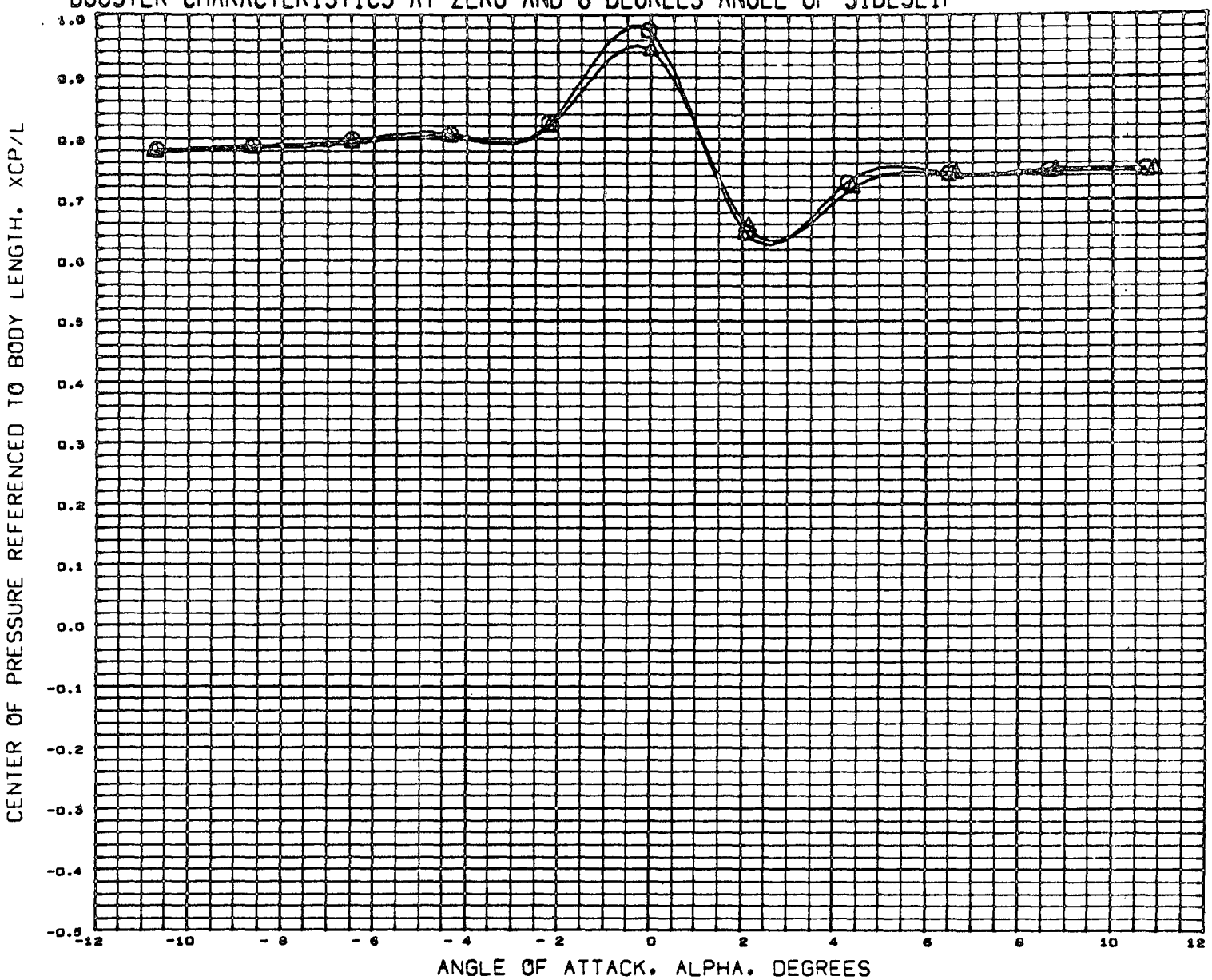


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V0	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V0	0.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.0360	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

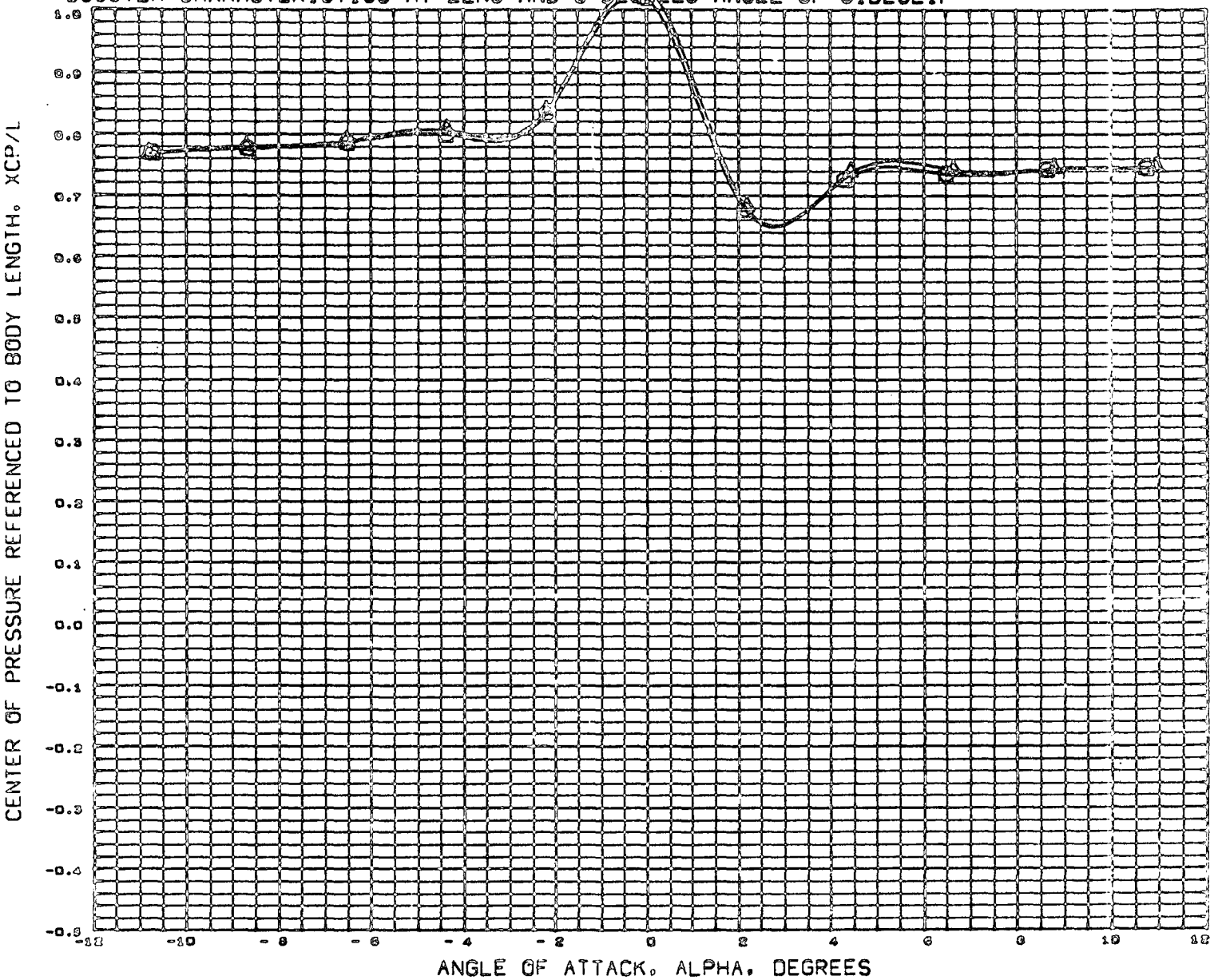


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

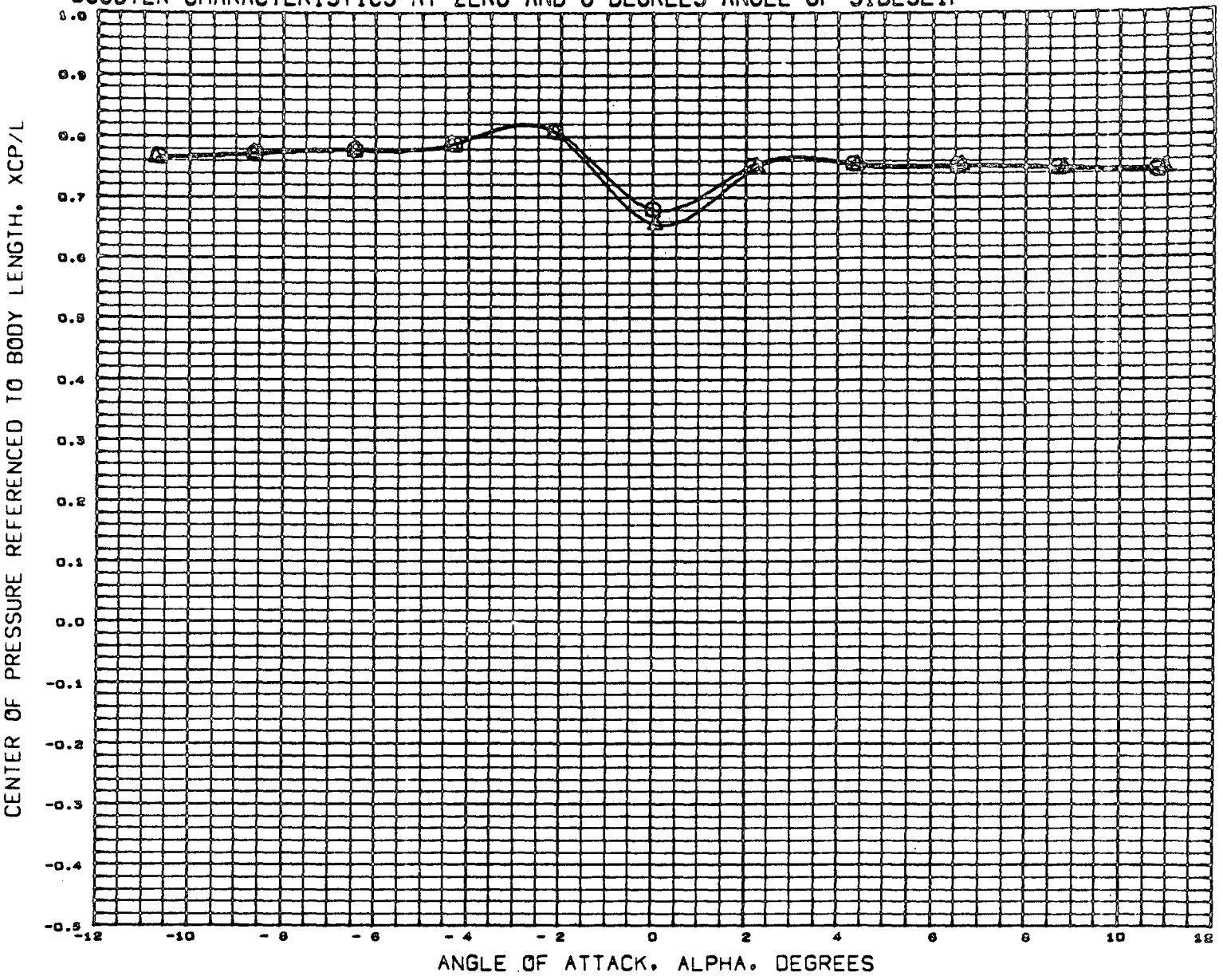


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(MS209A)		MSFC400 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(MS207A)		MSFC400 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	19.0900	SQ IN
LREF	3.0990	INCHES
BREF	6.0090	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

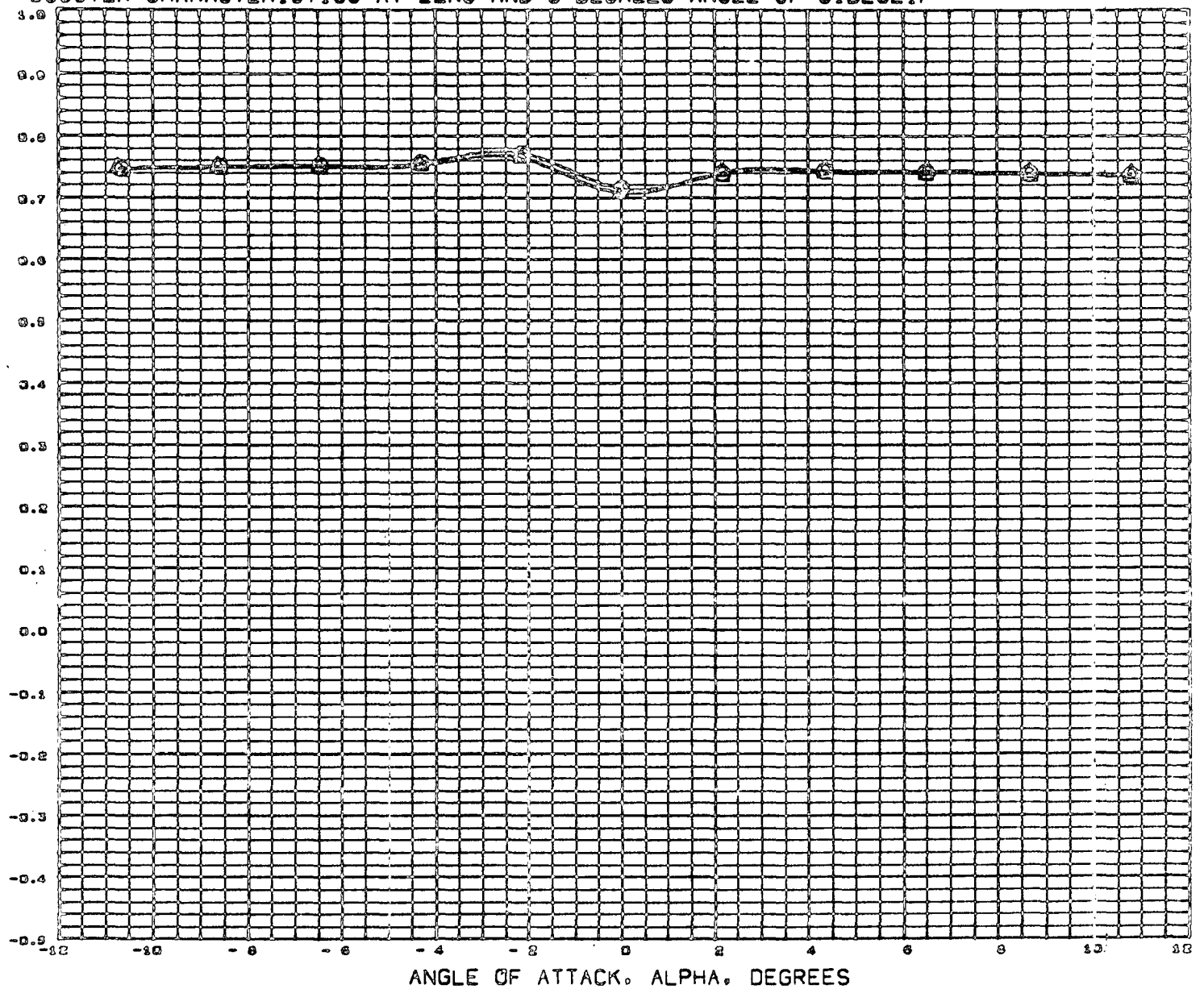


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



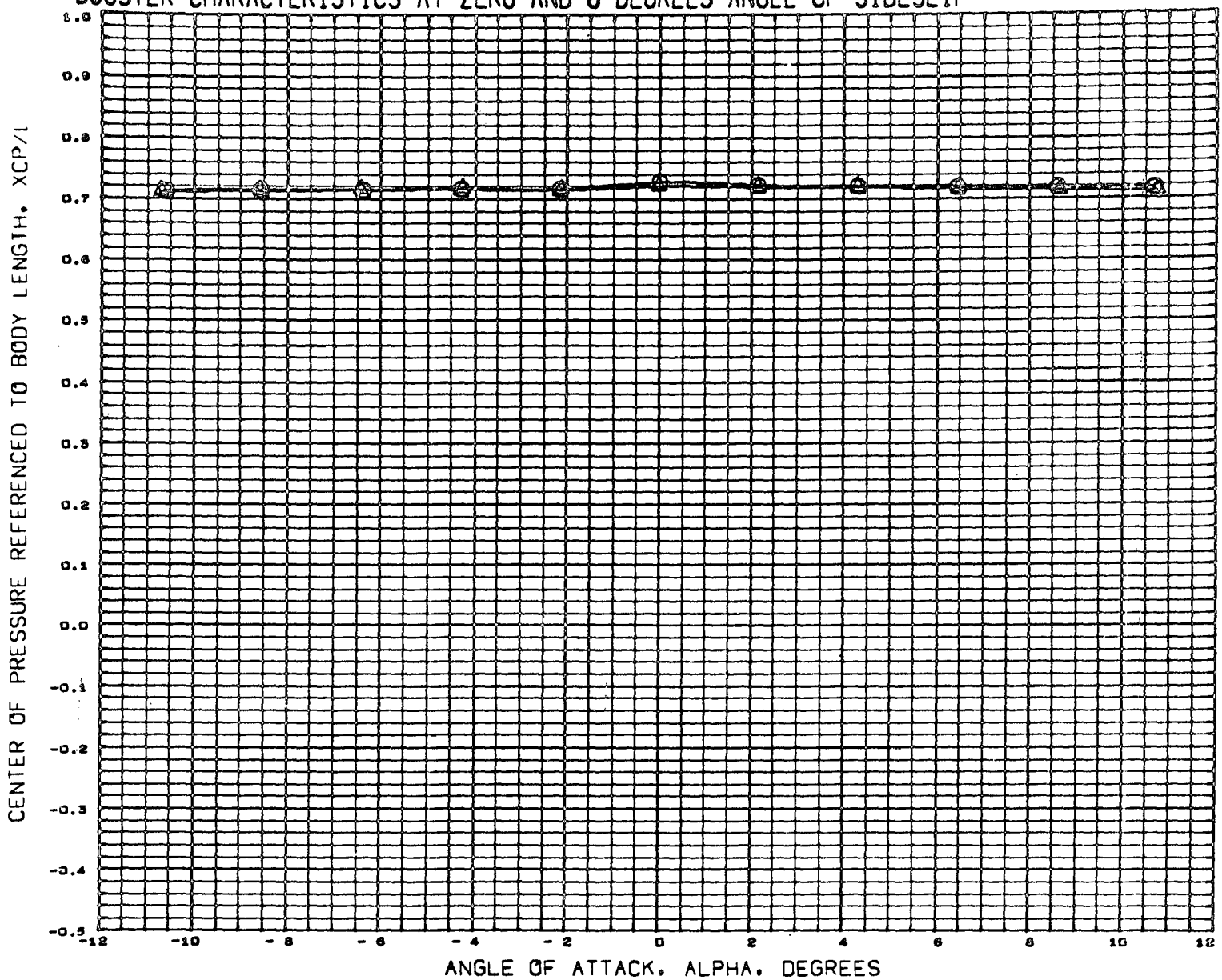
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION

SREF	19.6500	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	DCALC

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

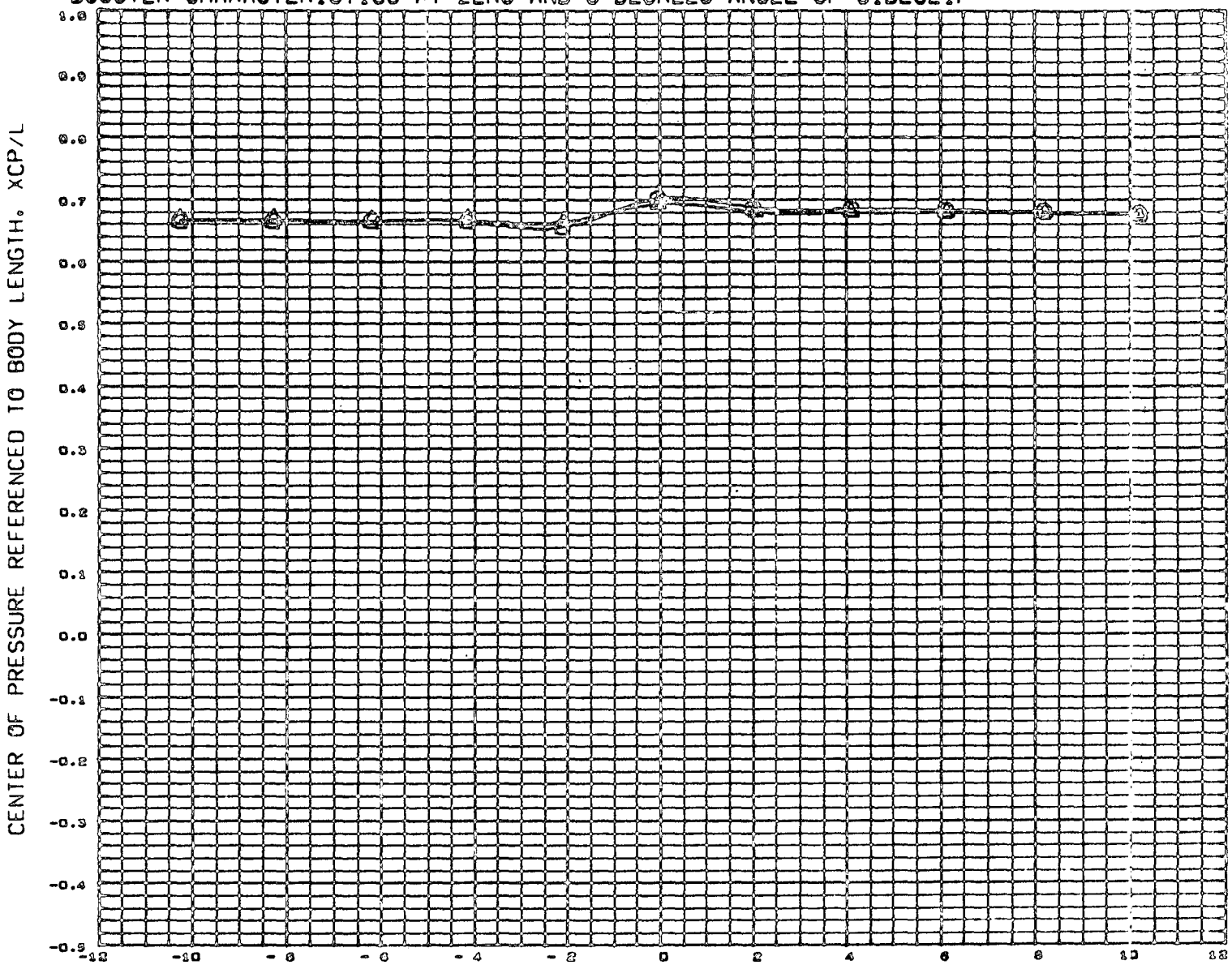


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

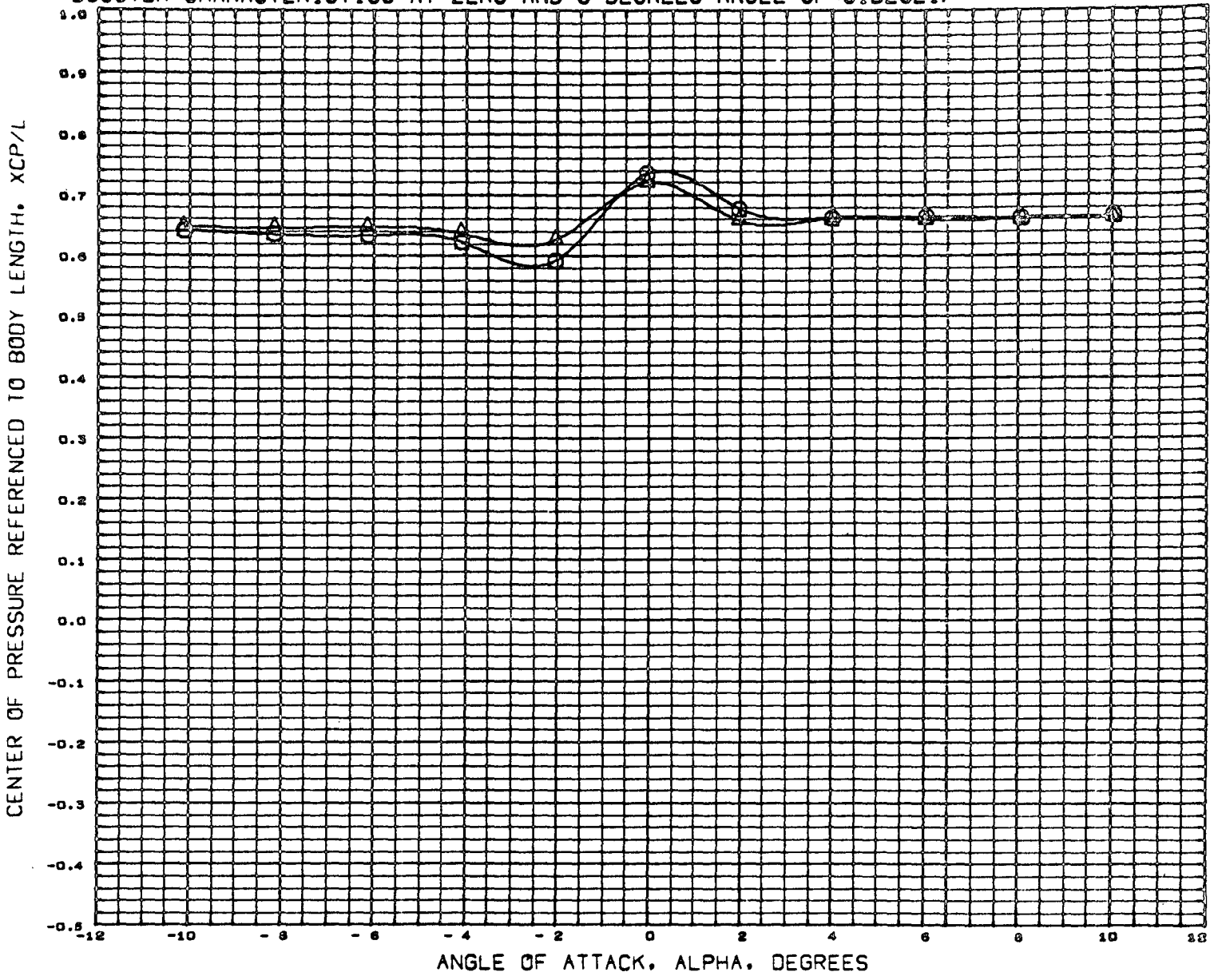


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

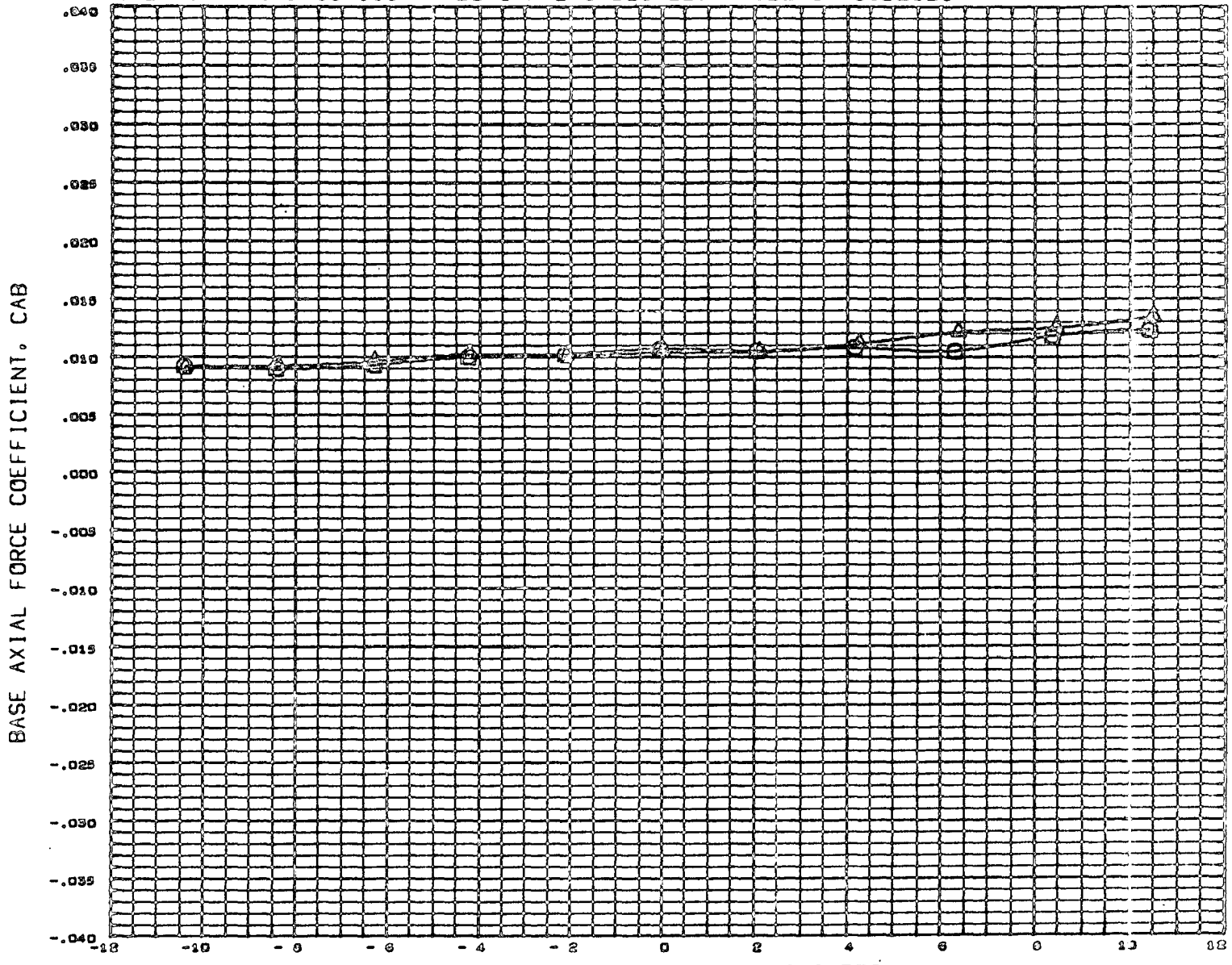


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

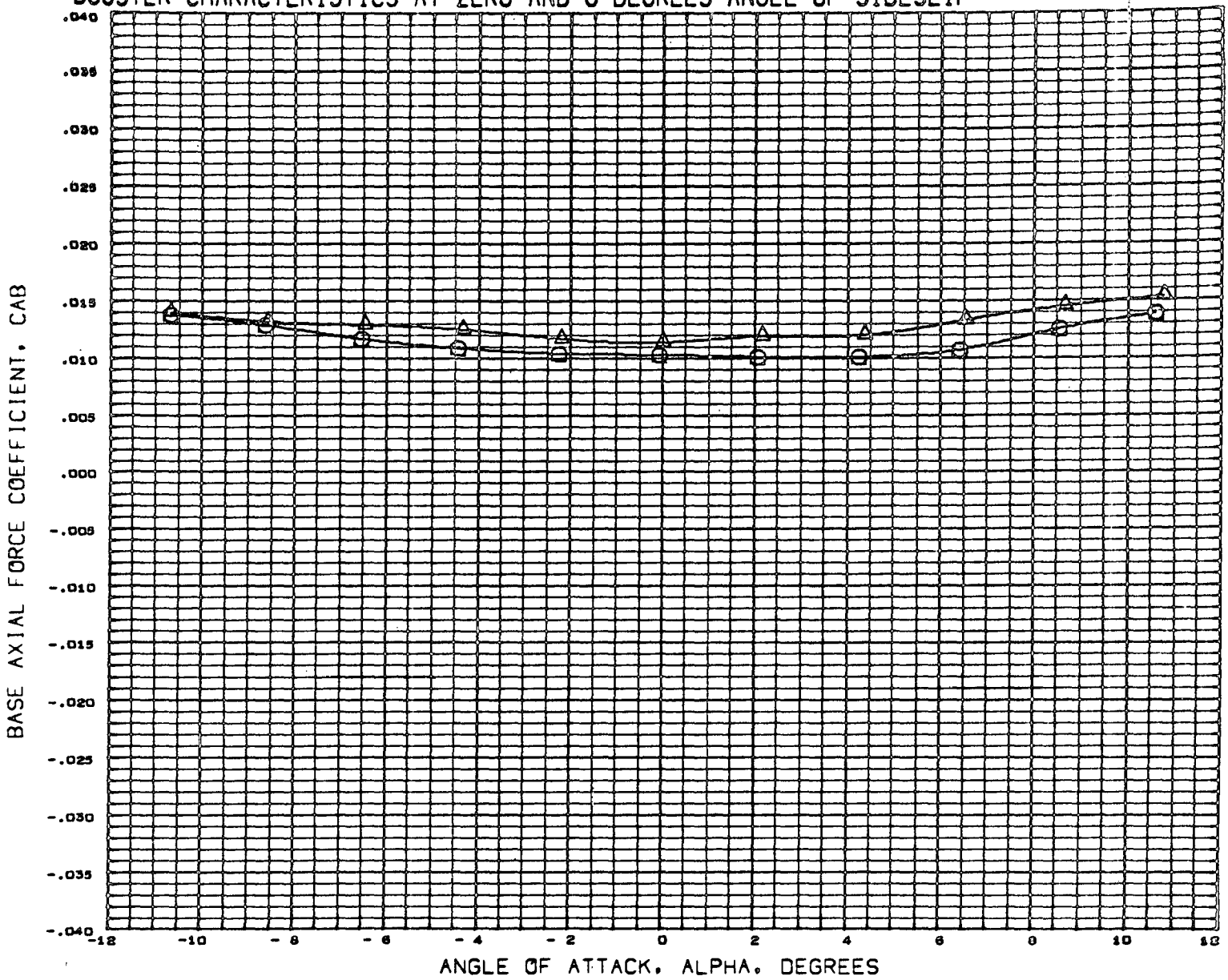


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6961	90 IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

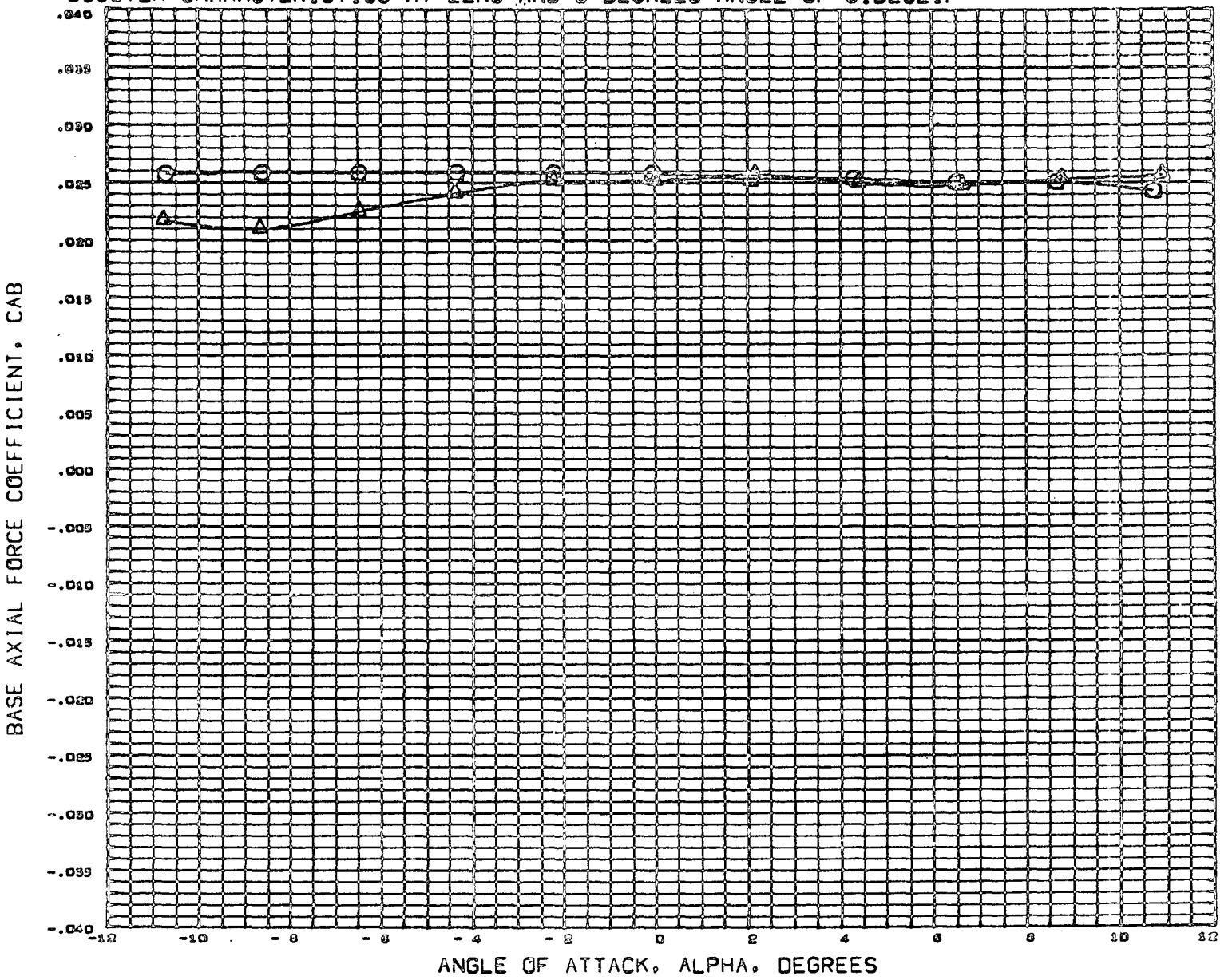


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0930	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

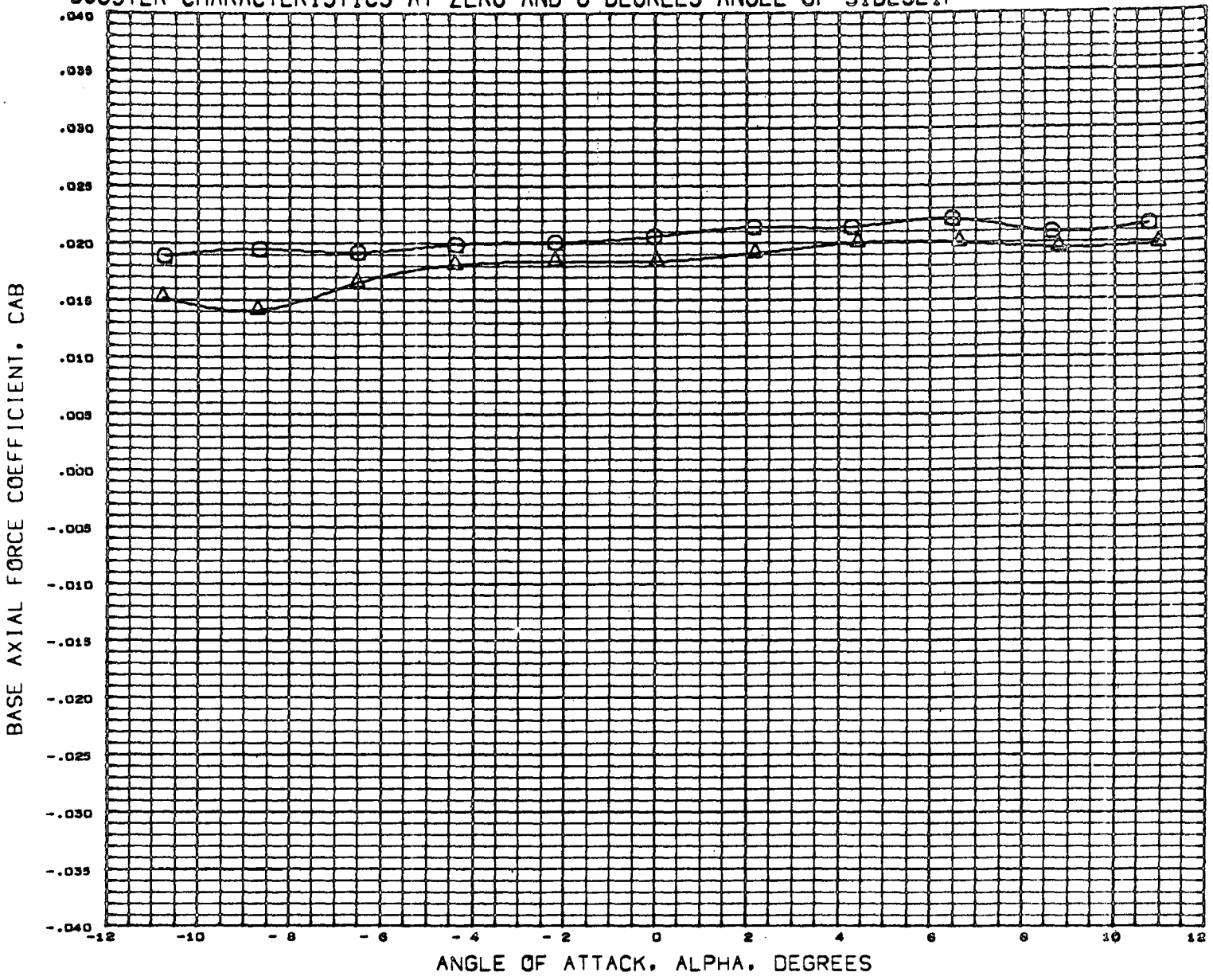


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6500	SQ IN
LREF	3.0000	INCHES
BREF	6.0000	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

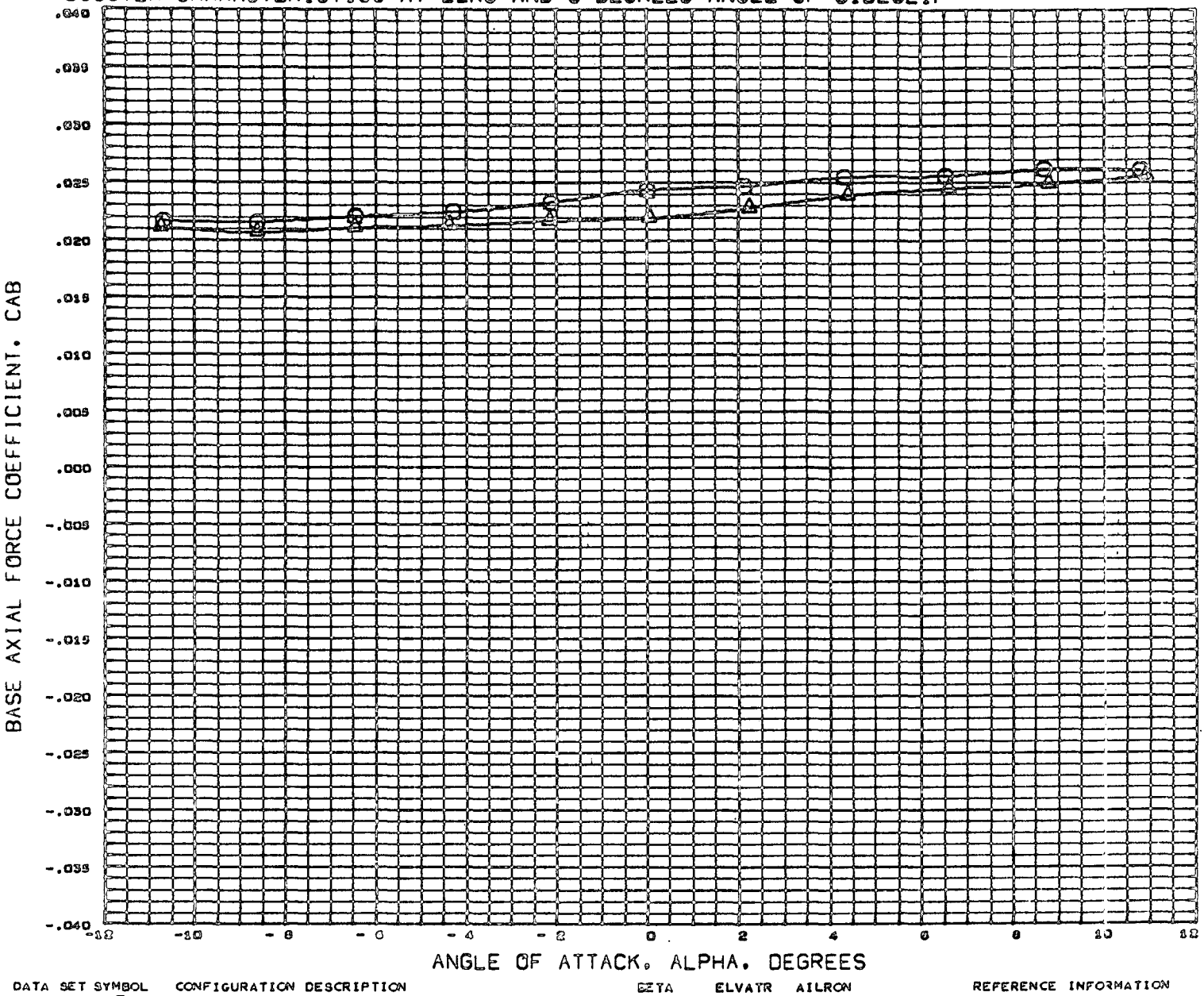


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0980	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



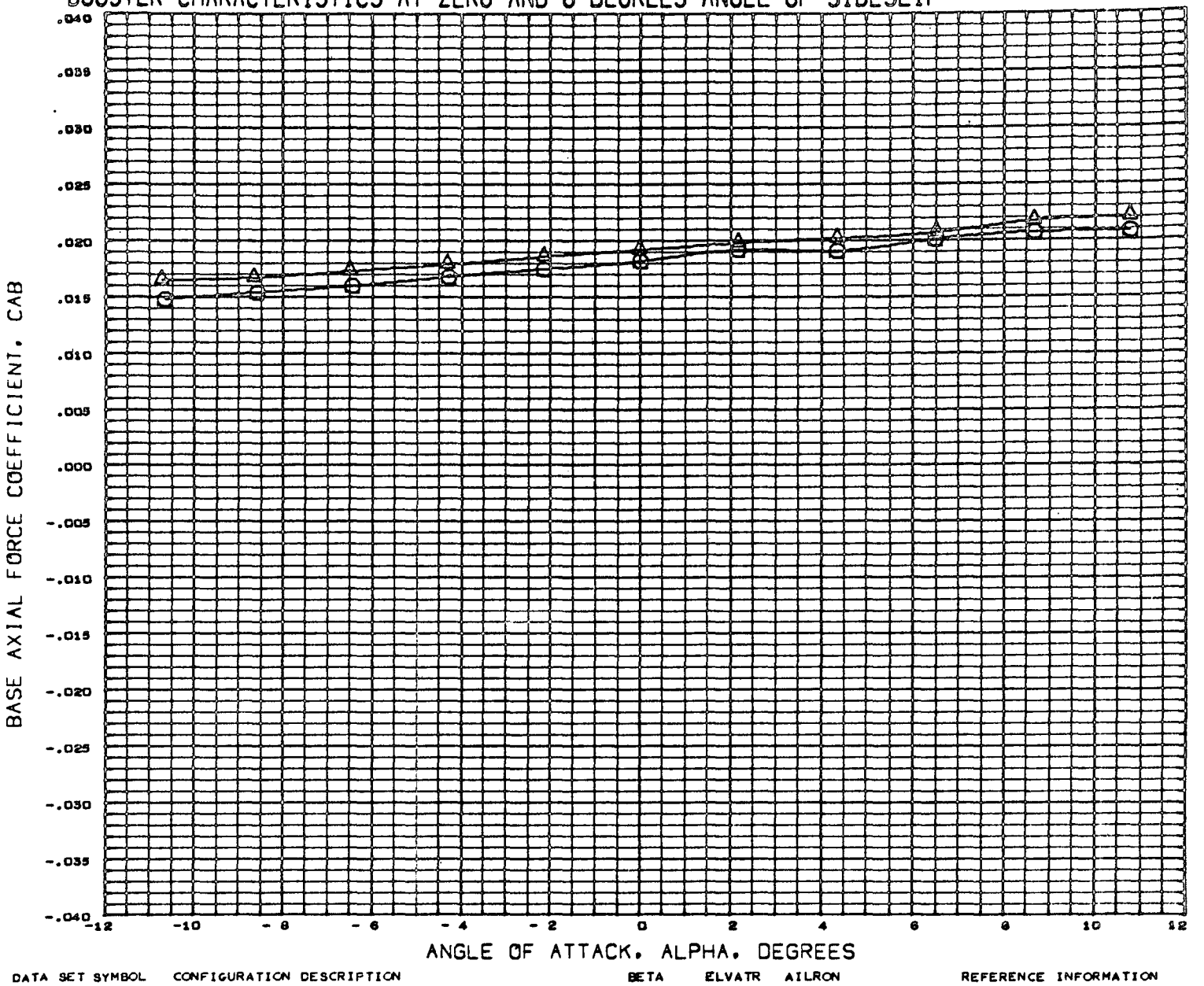
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B2DC4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B2DC4BW14V8	6.000	0.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	19.096(	SQ IN
LREF	3.099(	INCHES
BREF	6.089(	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

5

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

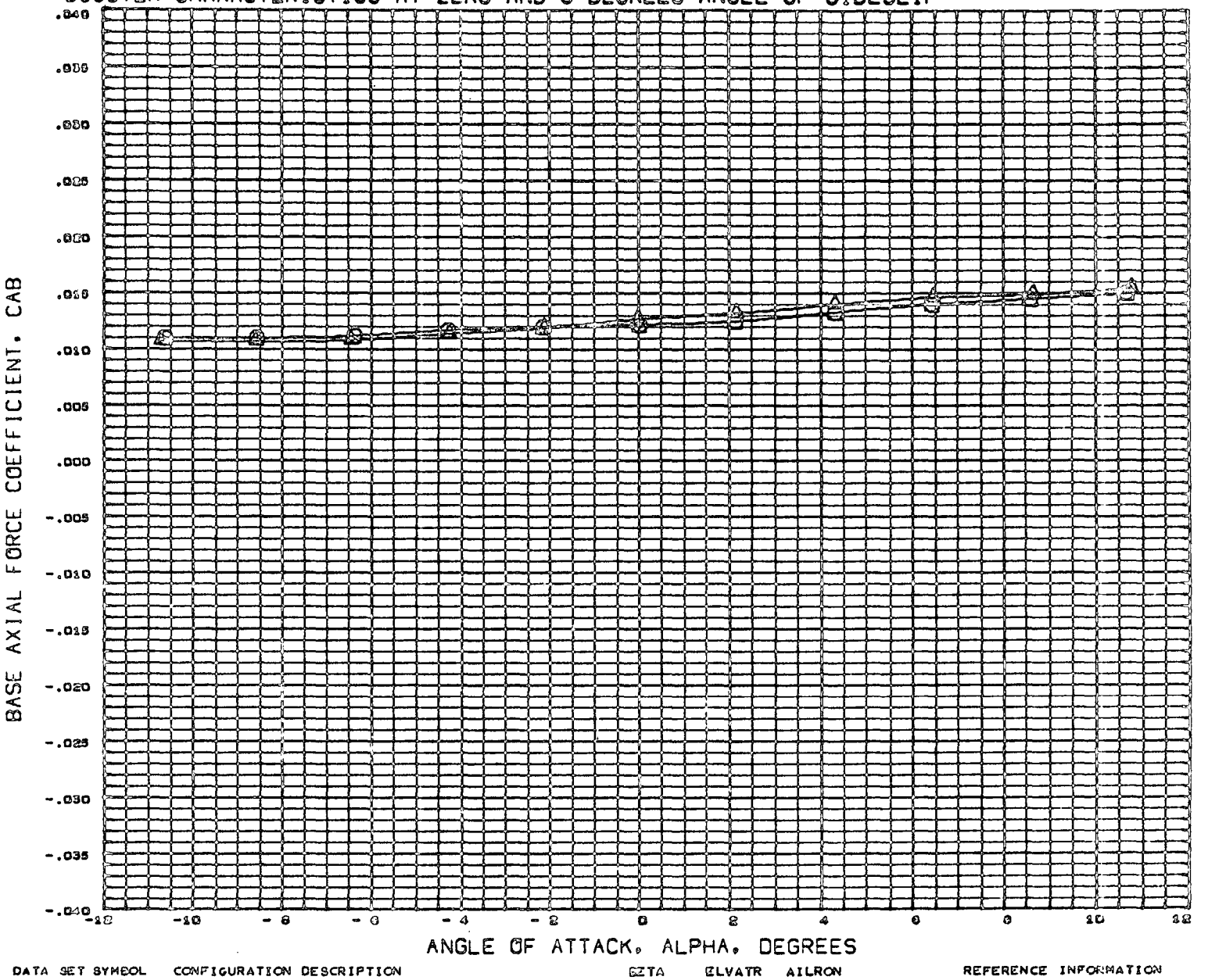


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

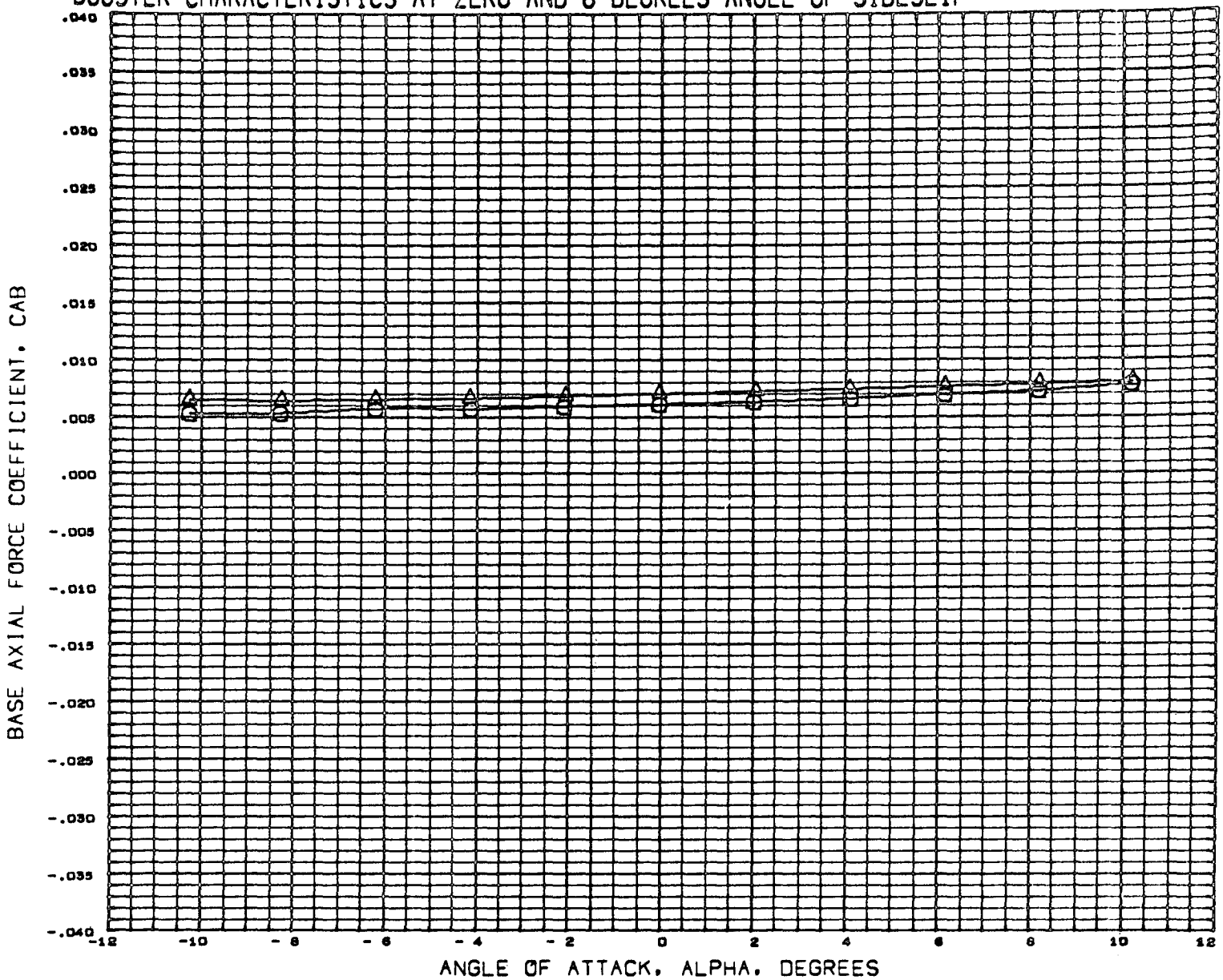


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BZTA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V0	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V6	6.000	0.000	0.000

MACH 1.999

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

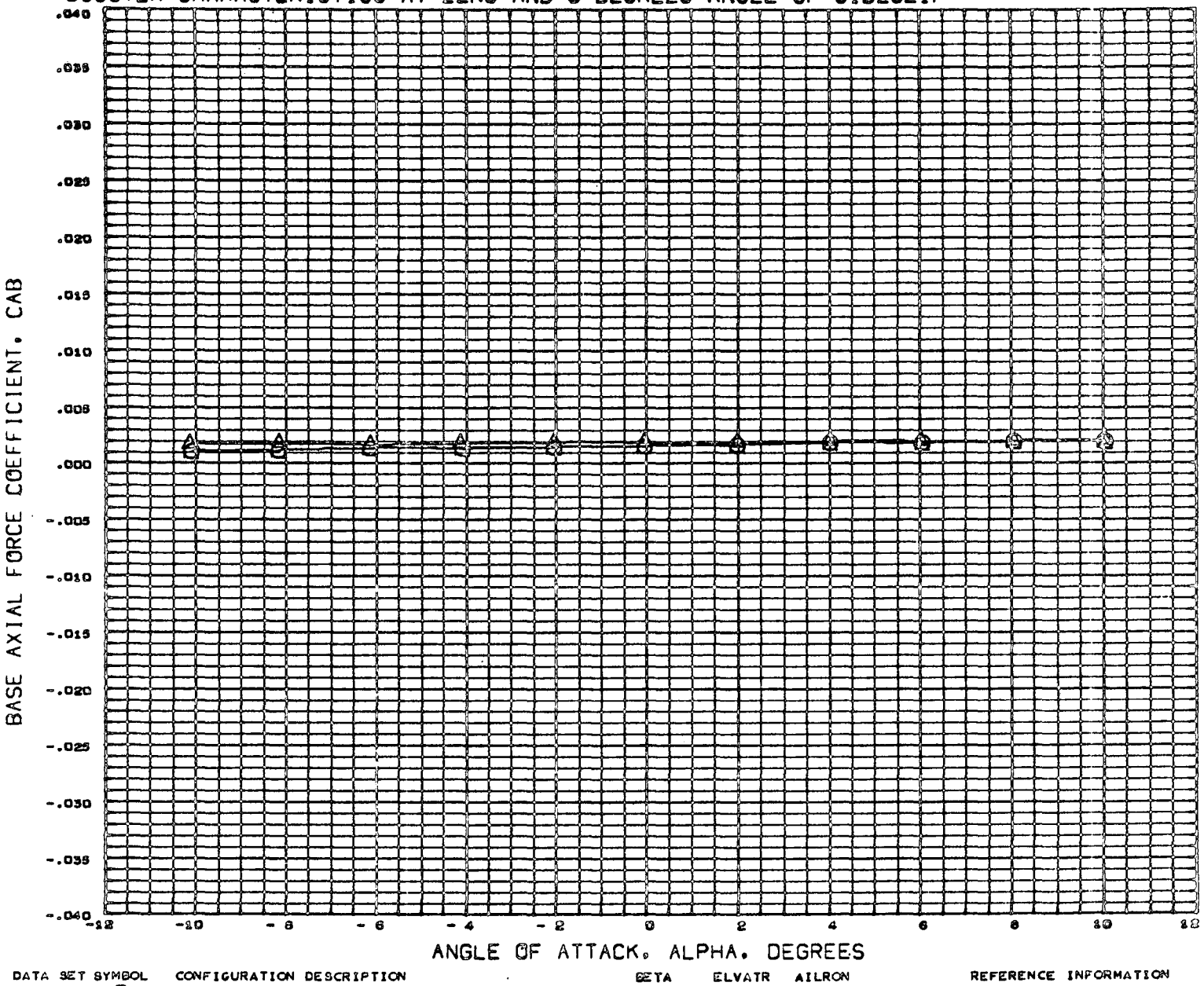


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0900	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

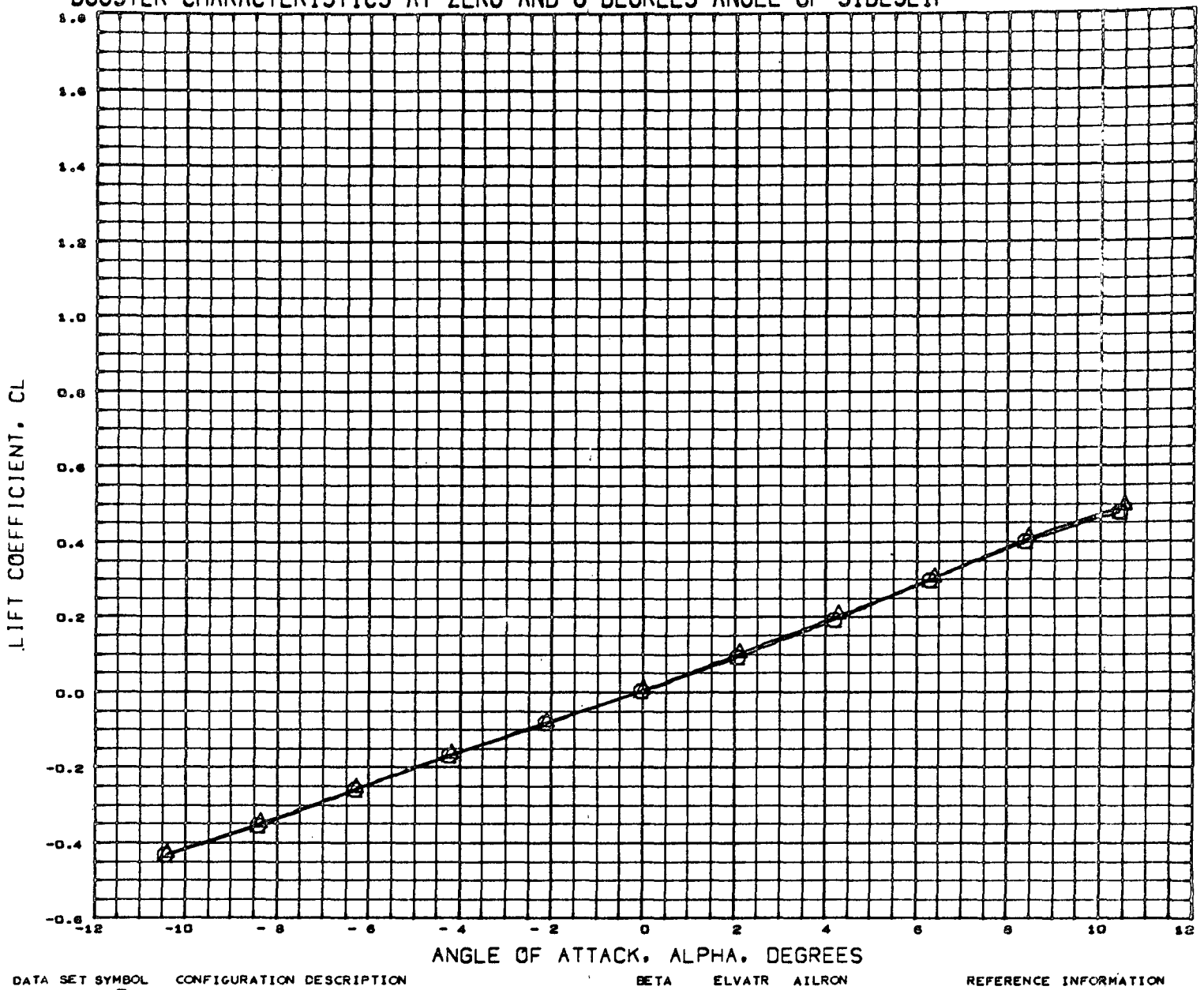


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3207A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 4.999

REFERENCE INFORMATION		
SREF	19.0960	SQ IN
LREF	3.0900	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

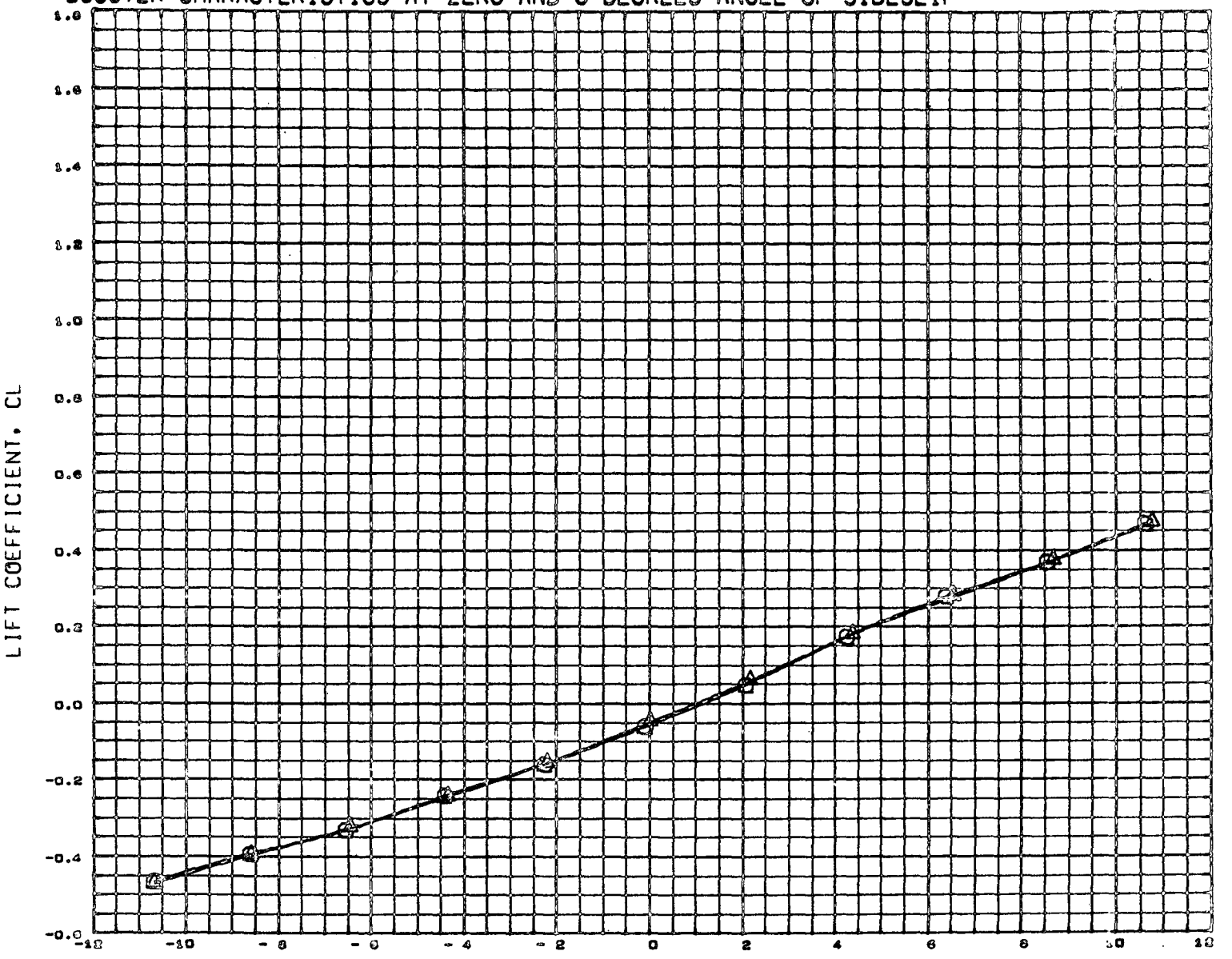


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

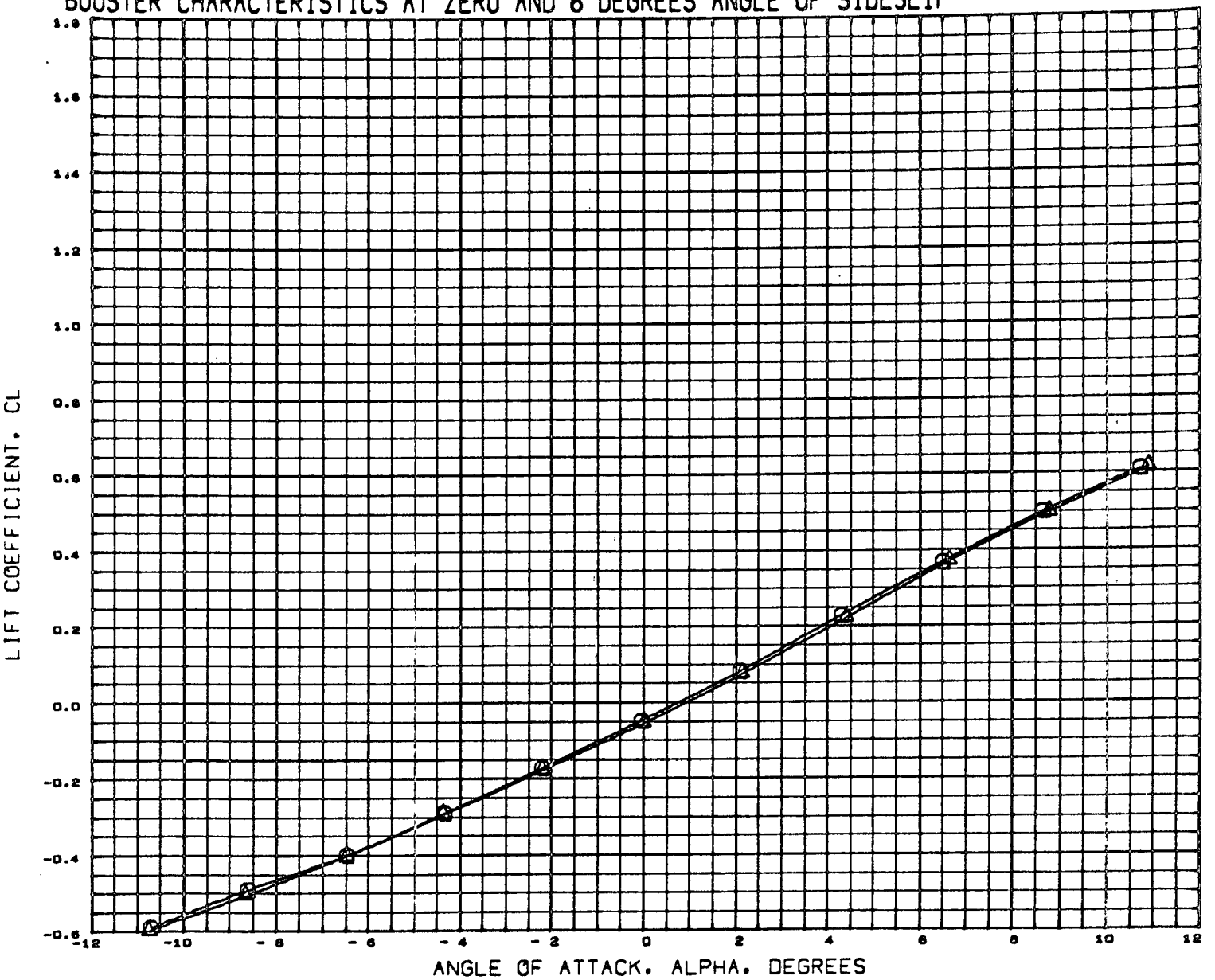


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0950	INCHES
BREF	6.0960	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

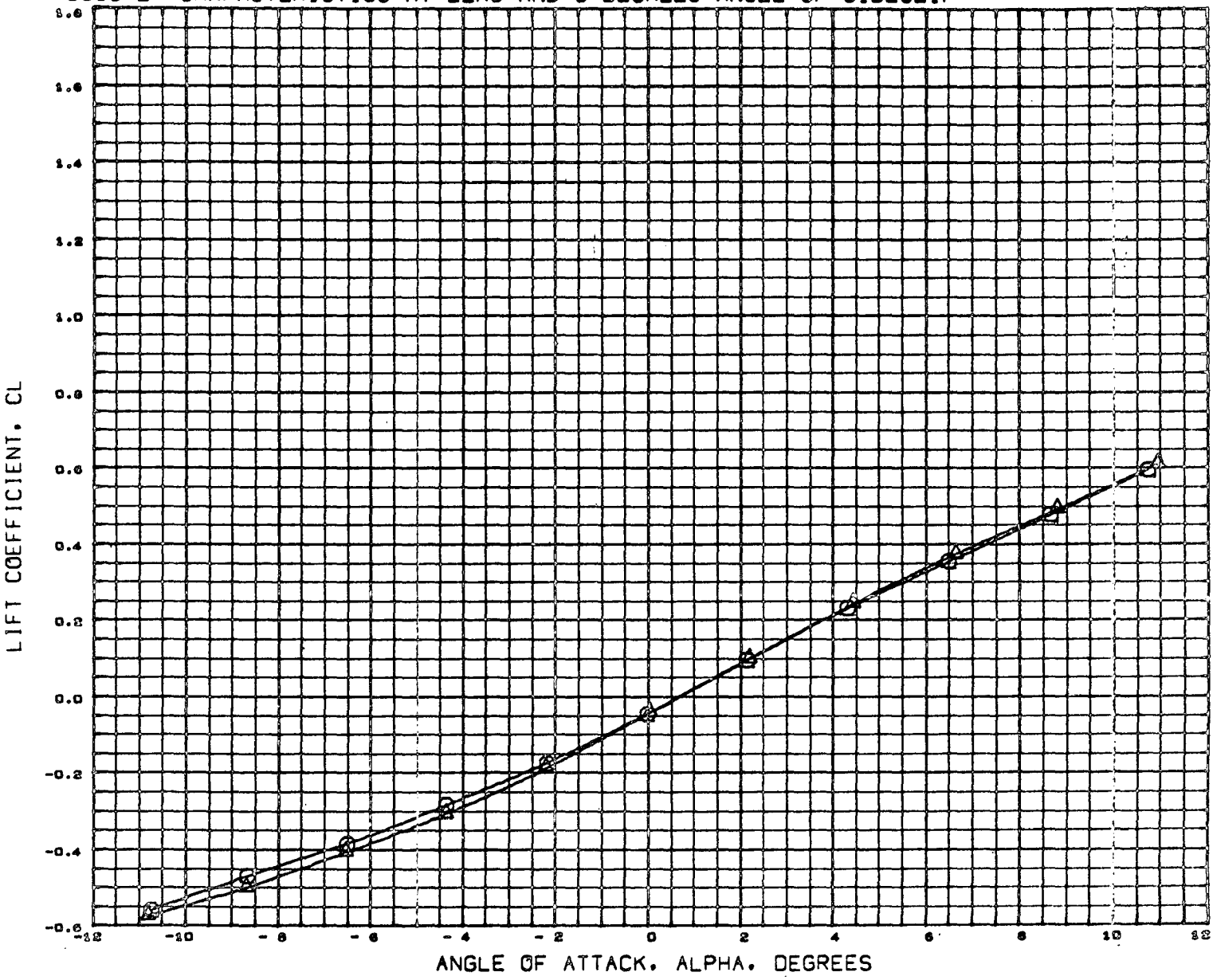


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

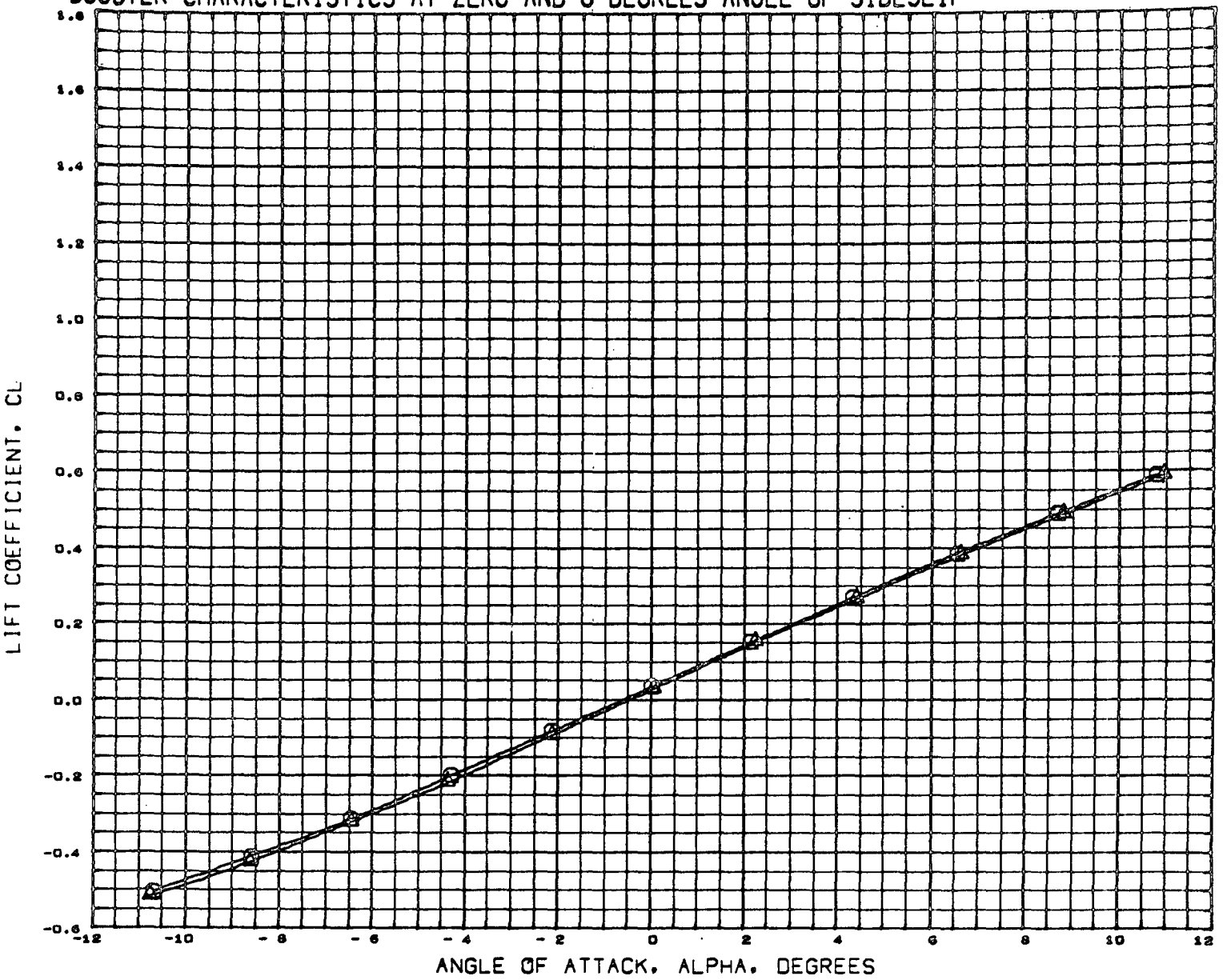


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.0560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

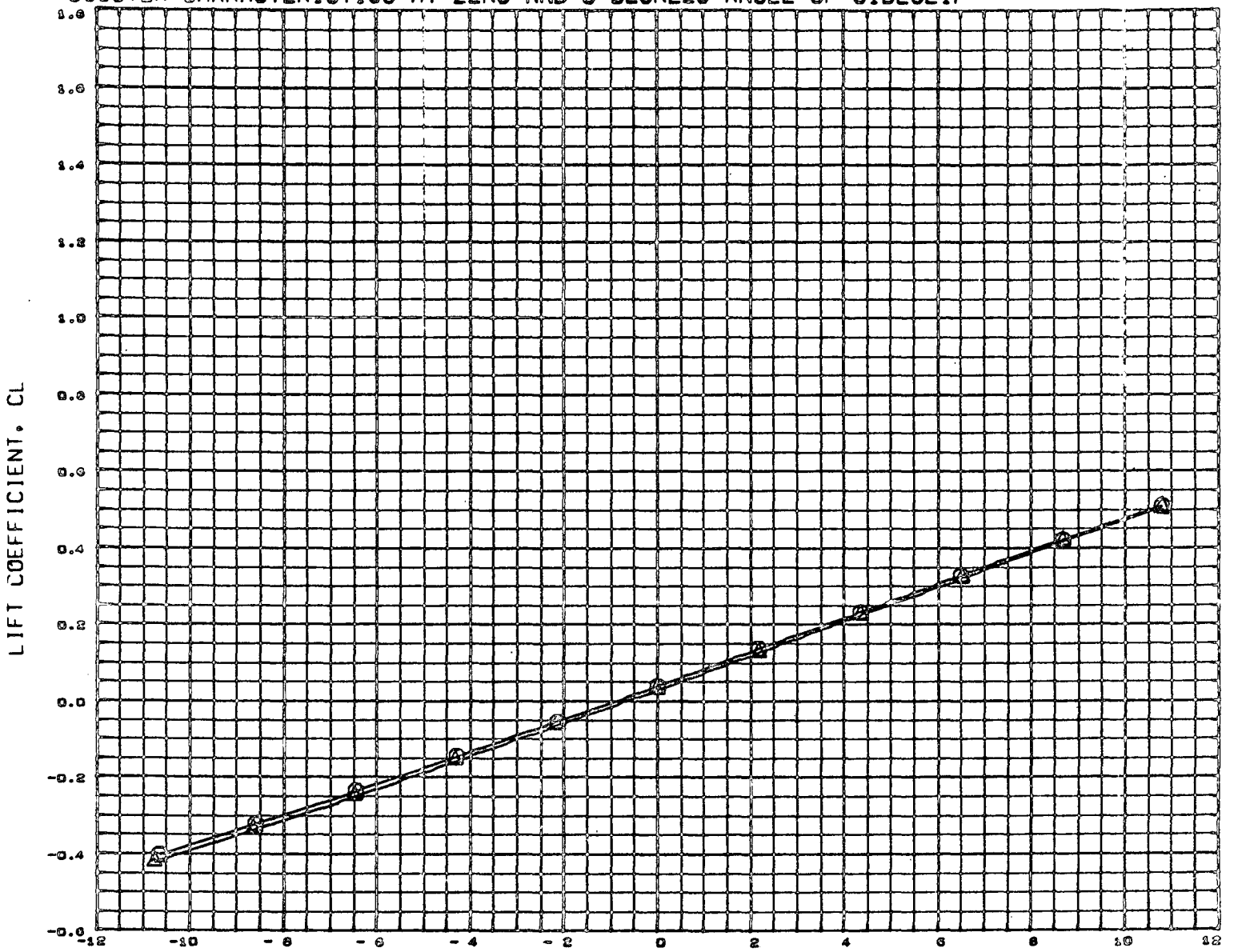


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

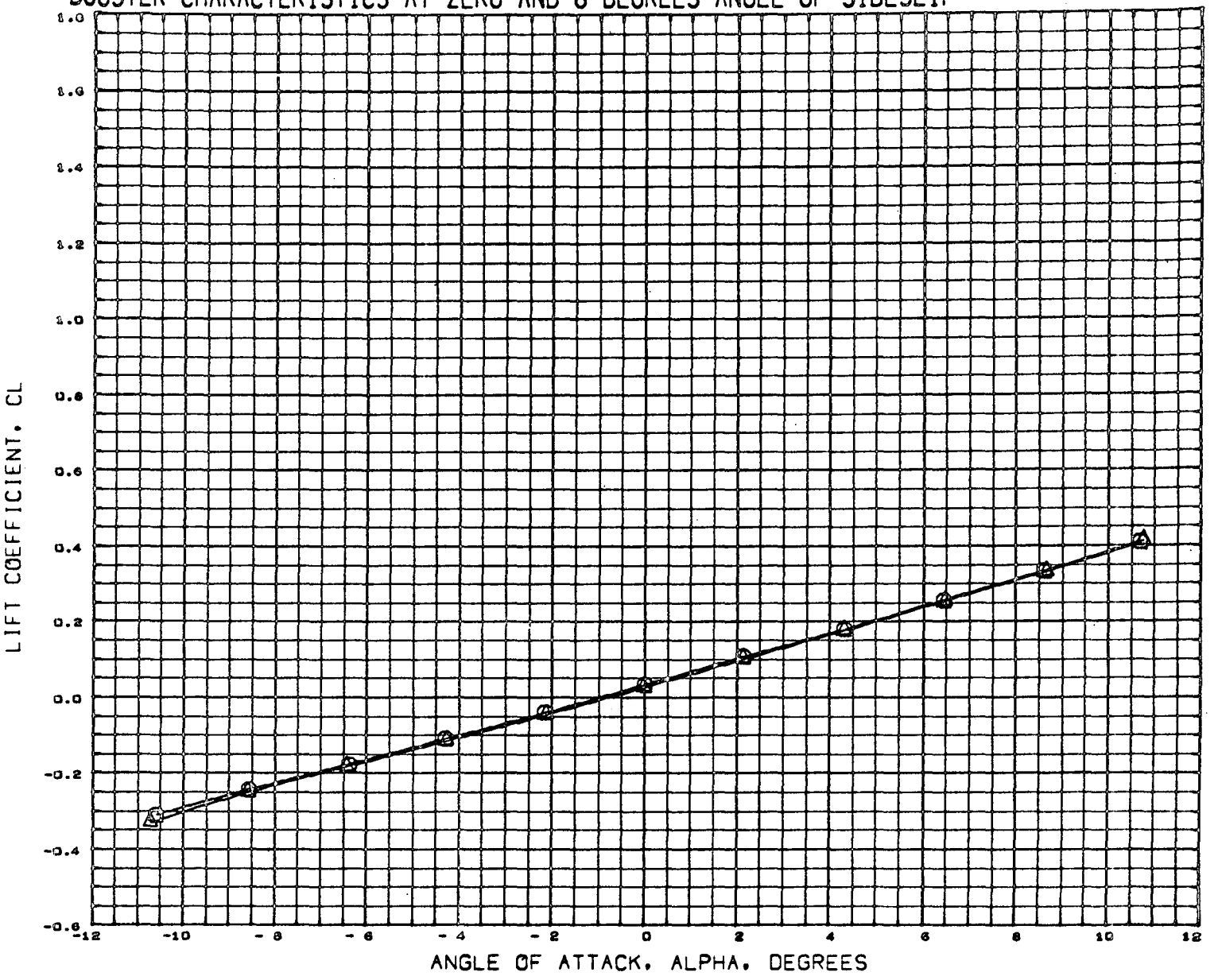


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B2UC4BW14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B2UC4BW14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

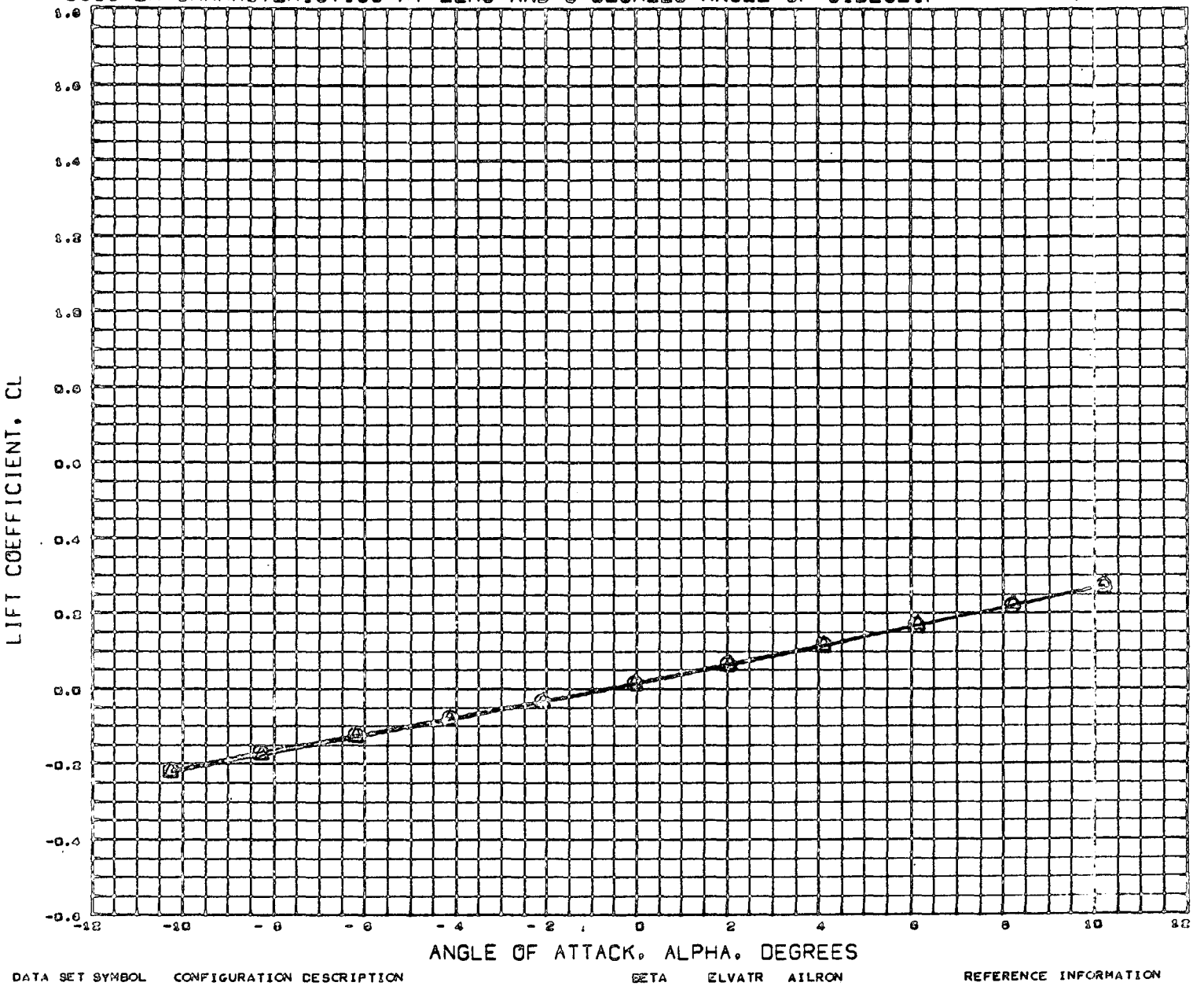


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

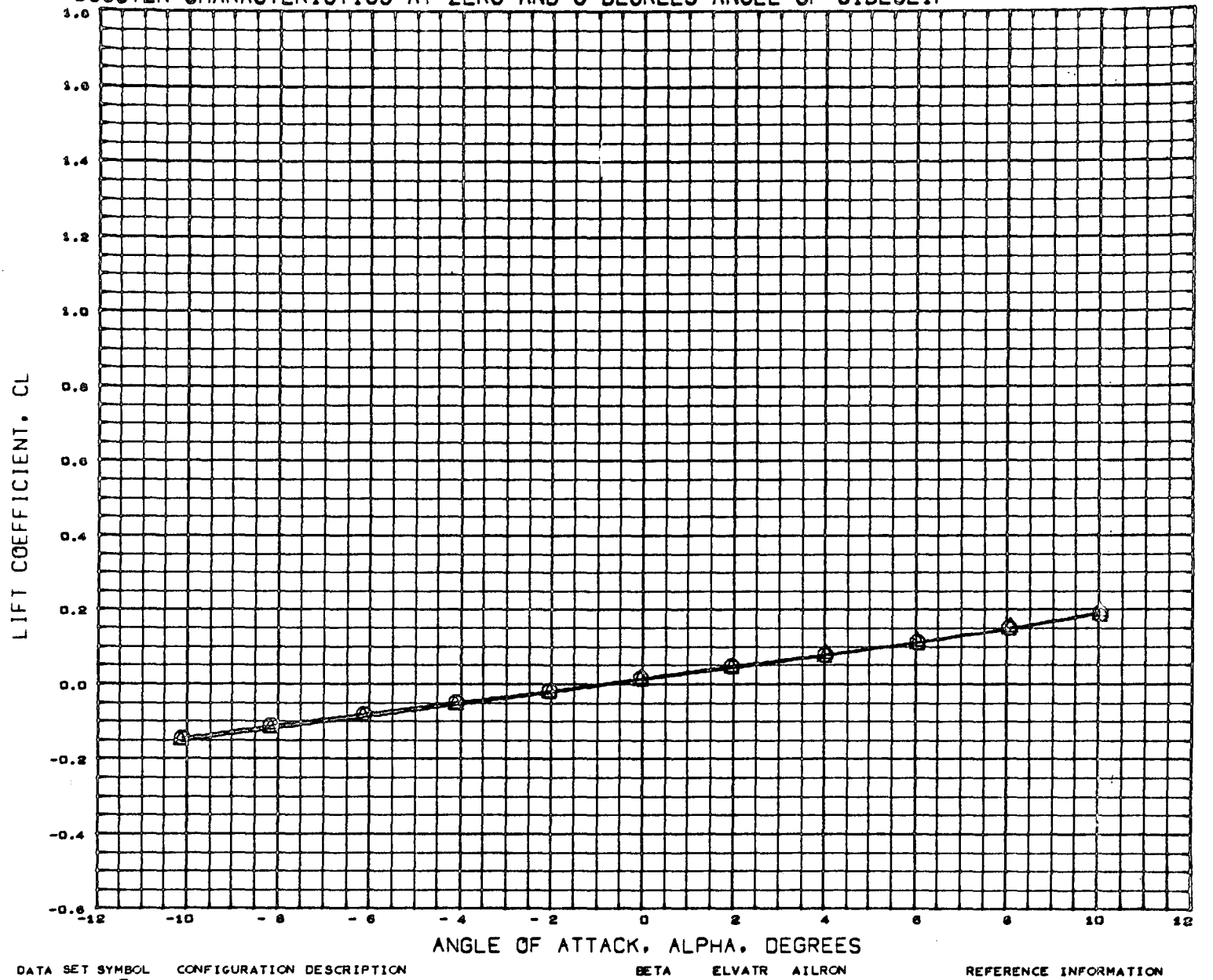


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 2.900

REFERENCE INFORMATION		
SREF	15.656	SQ IN
LREF	3.089	INCHES
BREF	6.099	INCHES
XMRP	0.000	
YMRP	0.000	
ZMRP	0.000	
SCALE	0.003	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

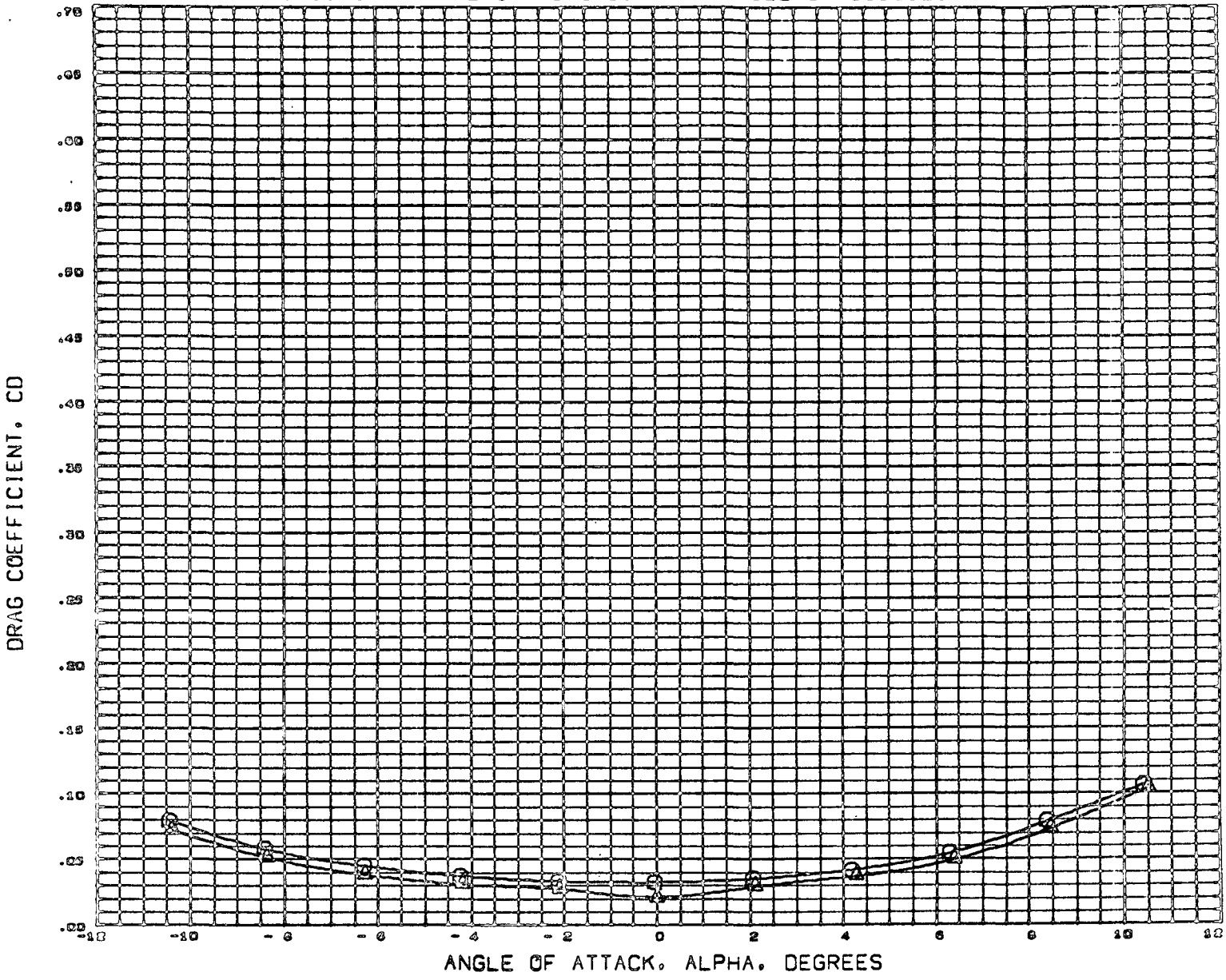


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

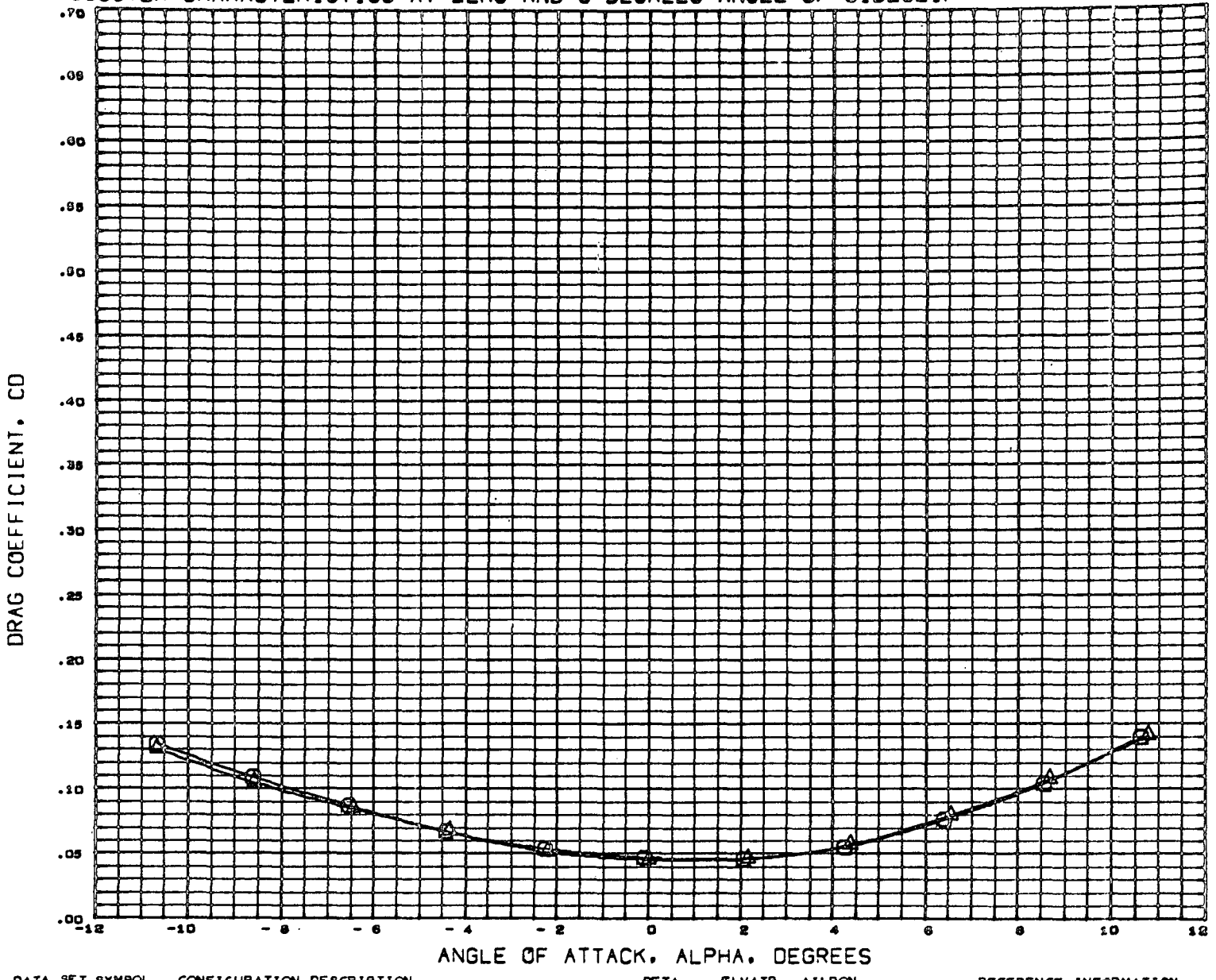


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.0960	SQ IN
LREF	3.0010	INCHES
BREF	6.0000	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

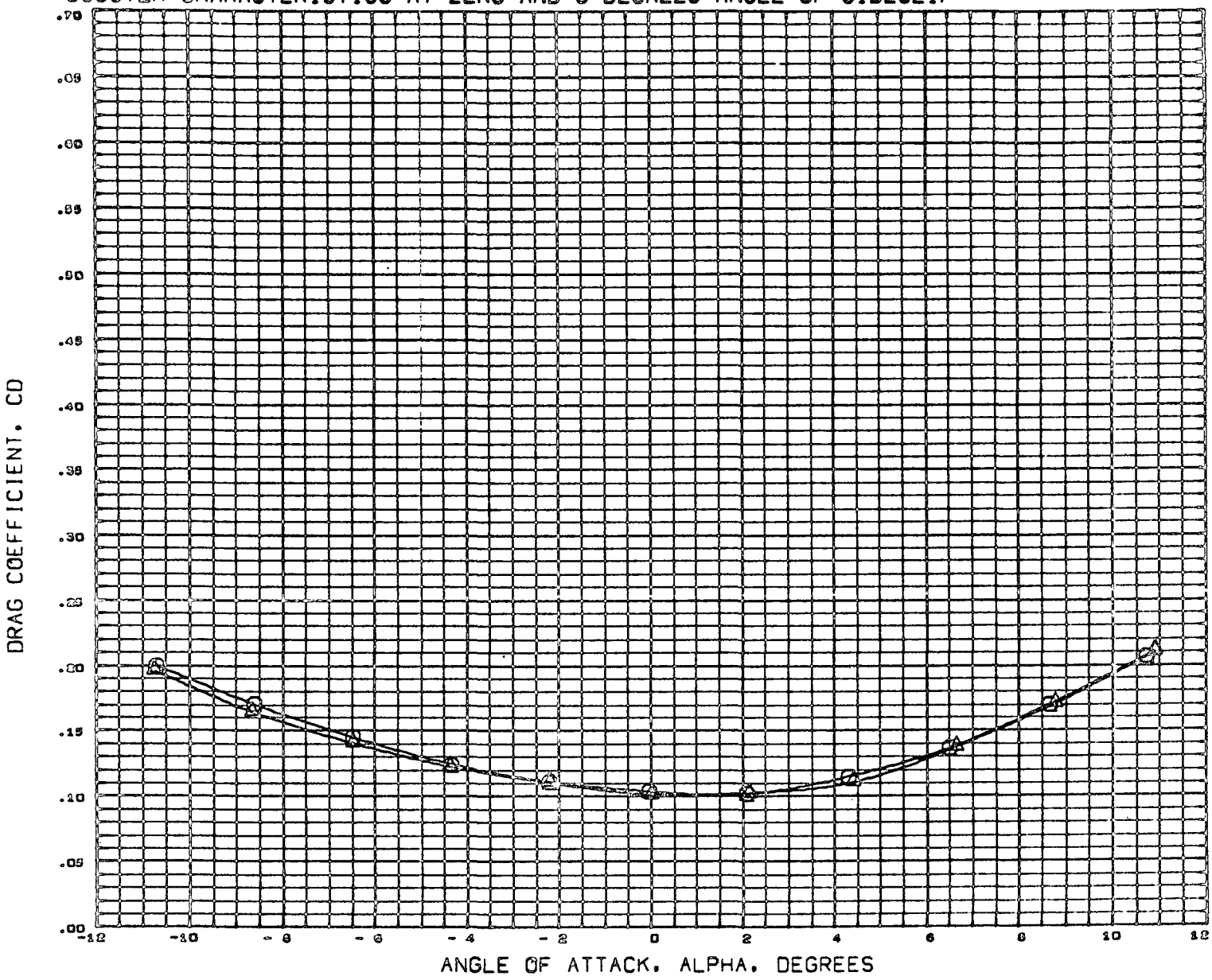


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

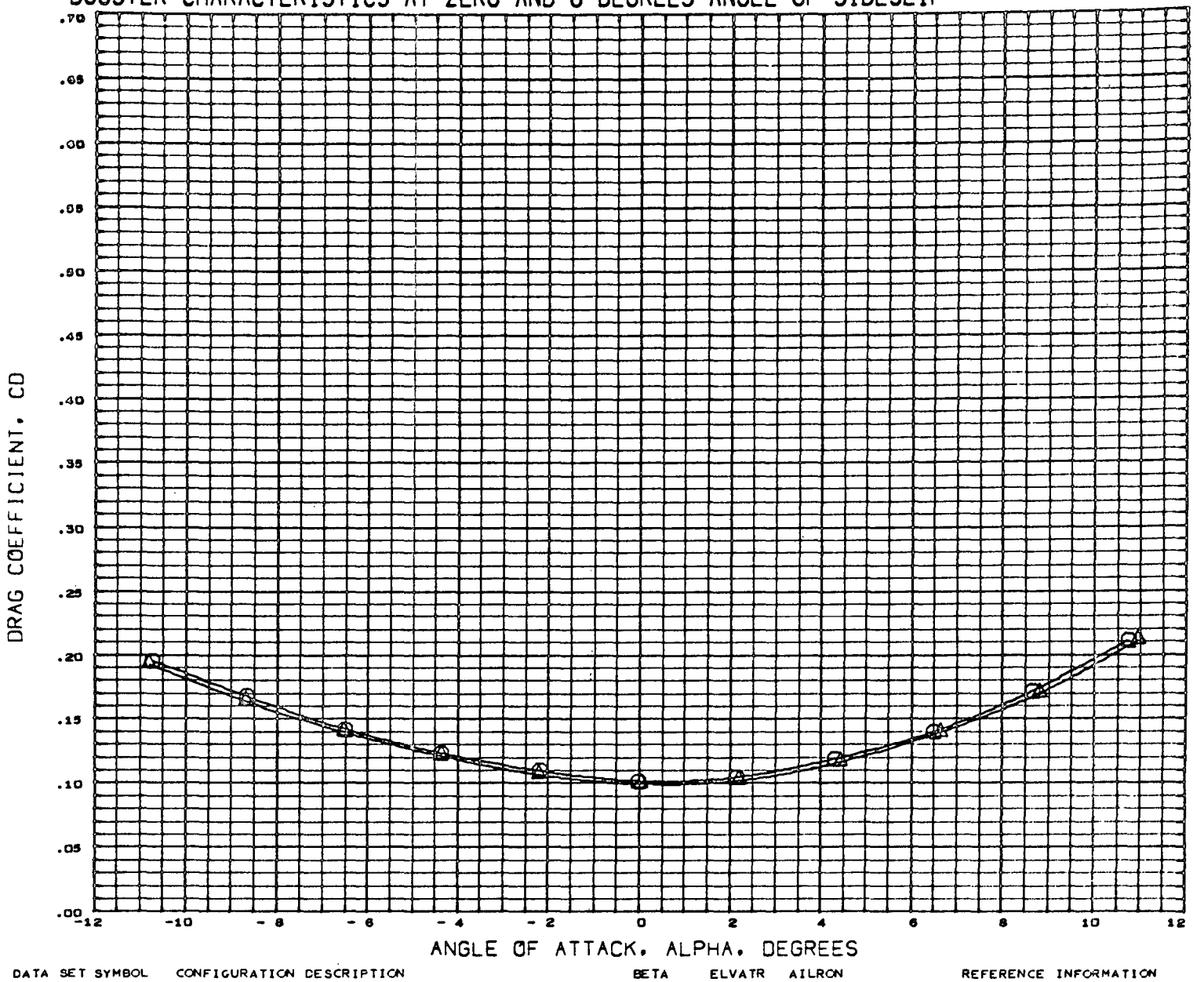


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M32J5A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.656[illegible]	SQ IN
LREF	3.095[illegible]	INCHES
BREF	6.099[illegible]	INCHES
XMRP	0.000[illegible]	
YMRP	0.000[illegible]	
ZMRP	0.000[illegible]	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

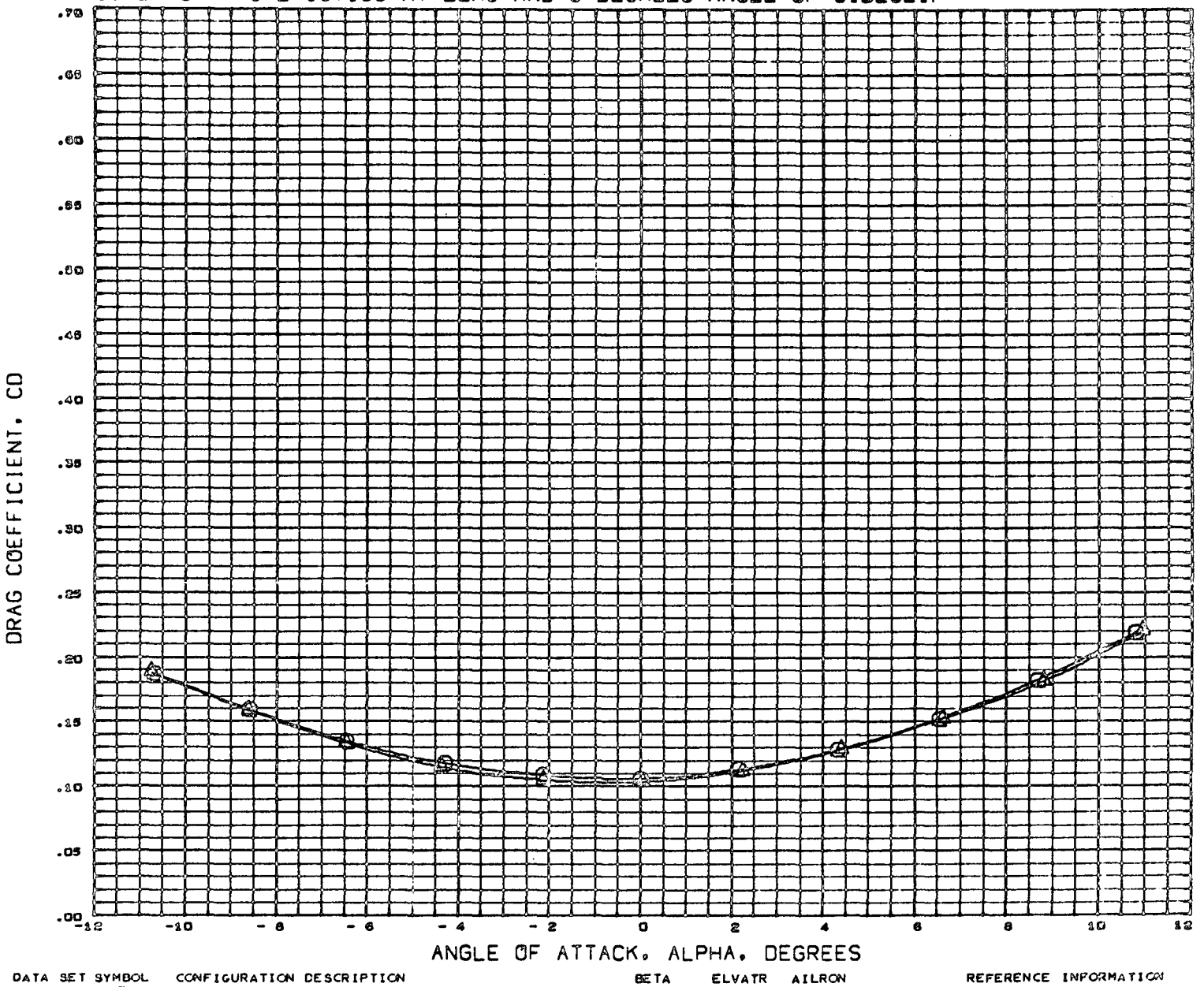


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

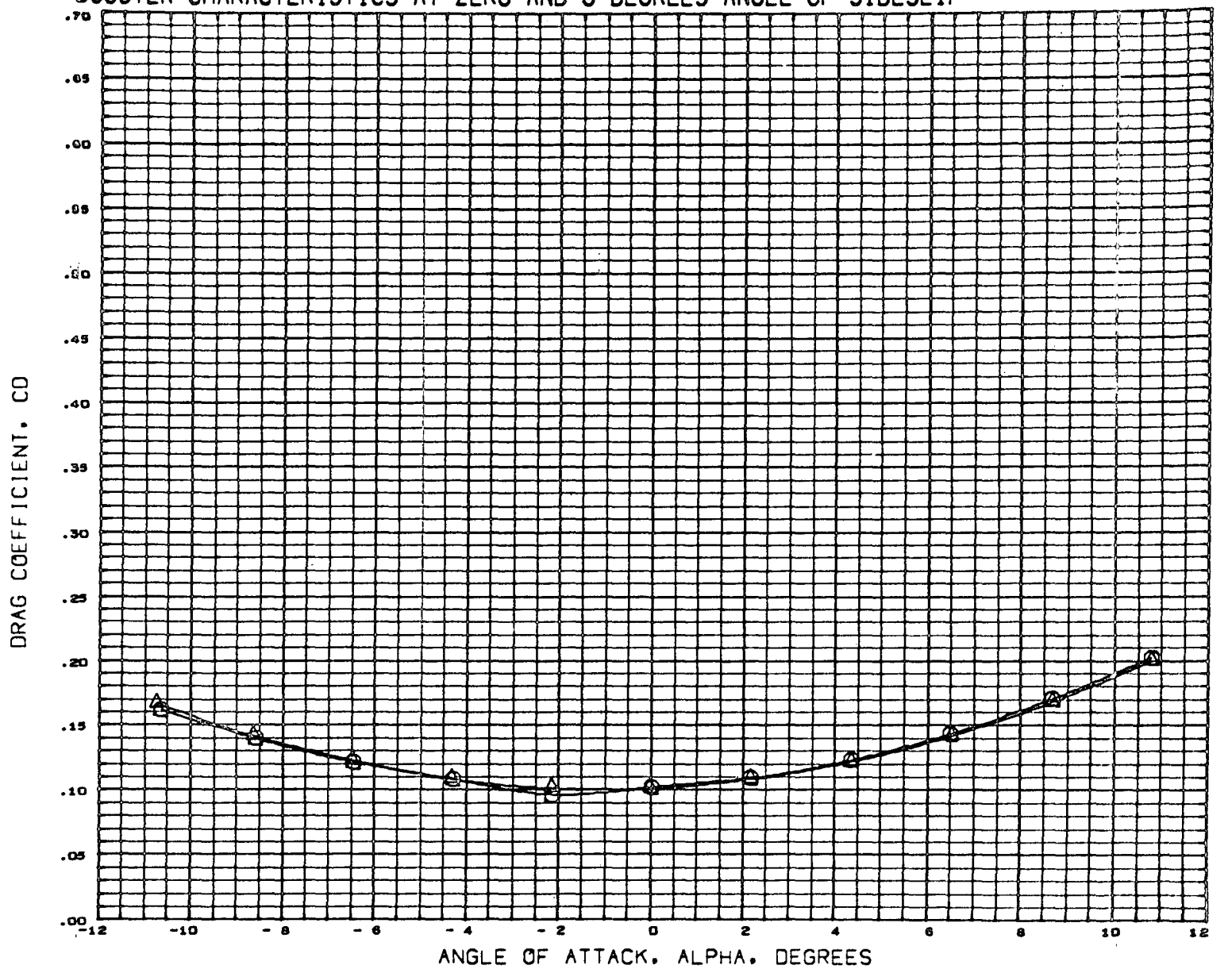


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	9.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

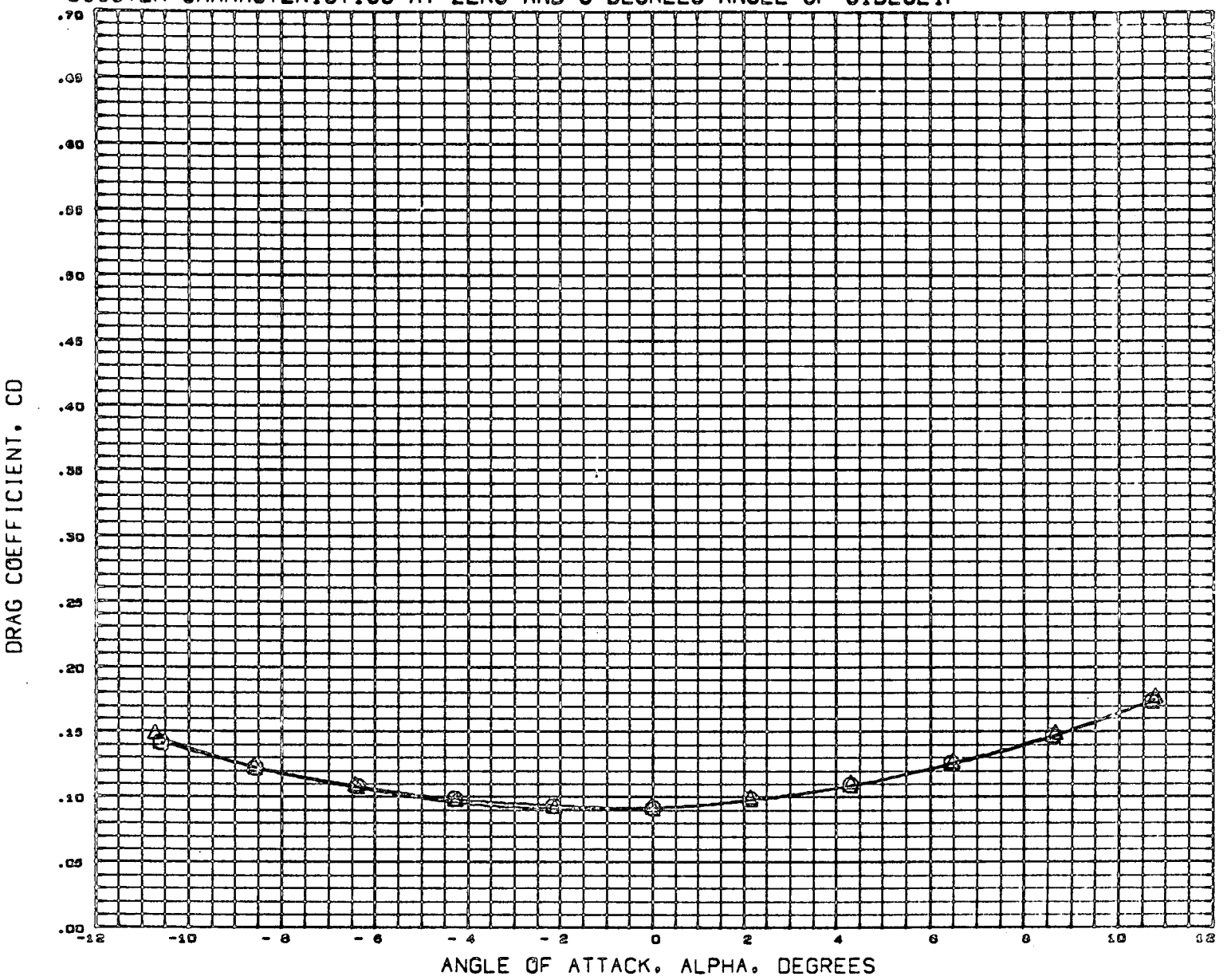


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B2DC4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B2DC4BW14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

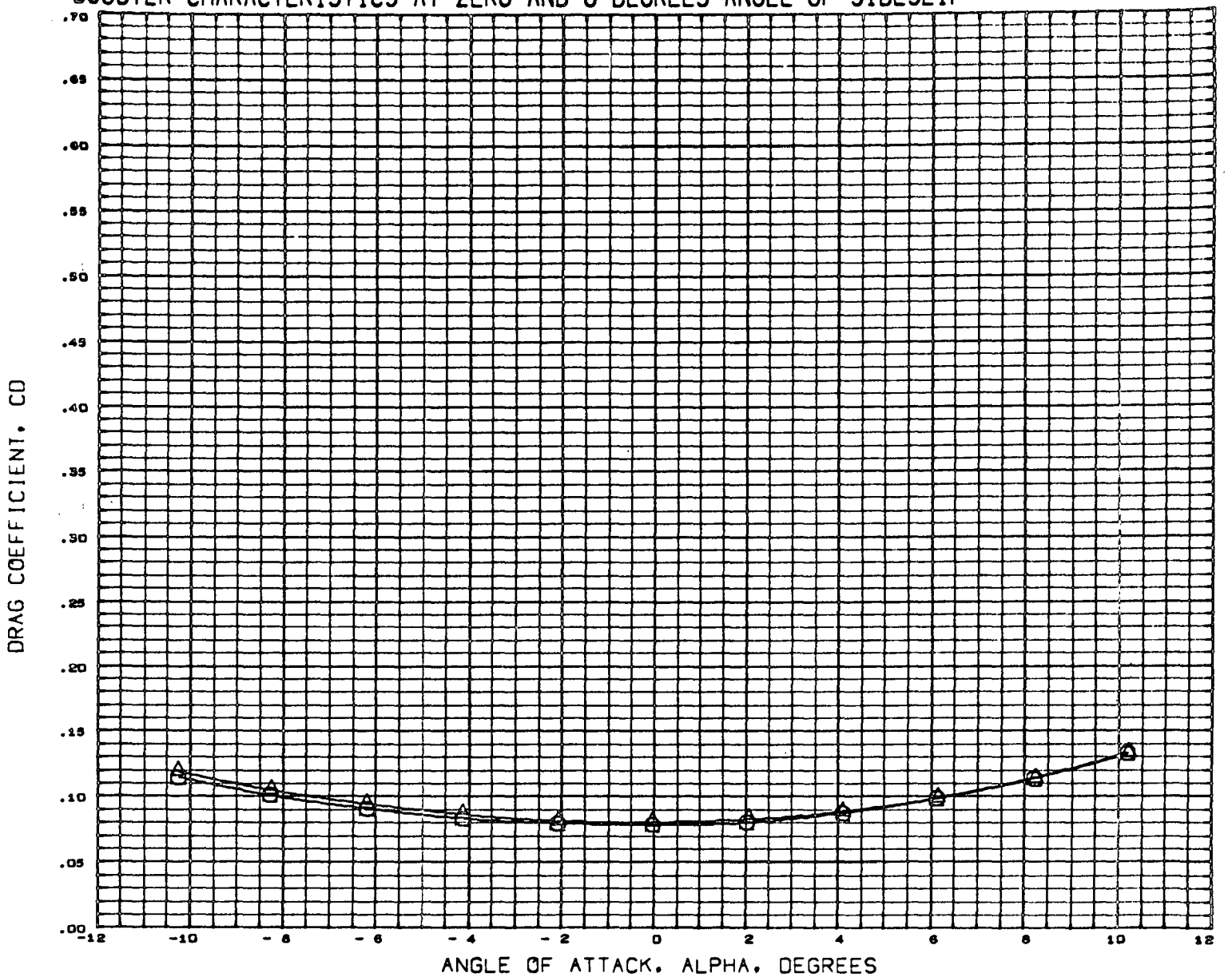


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3209A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

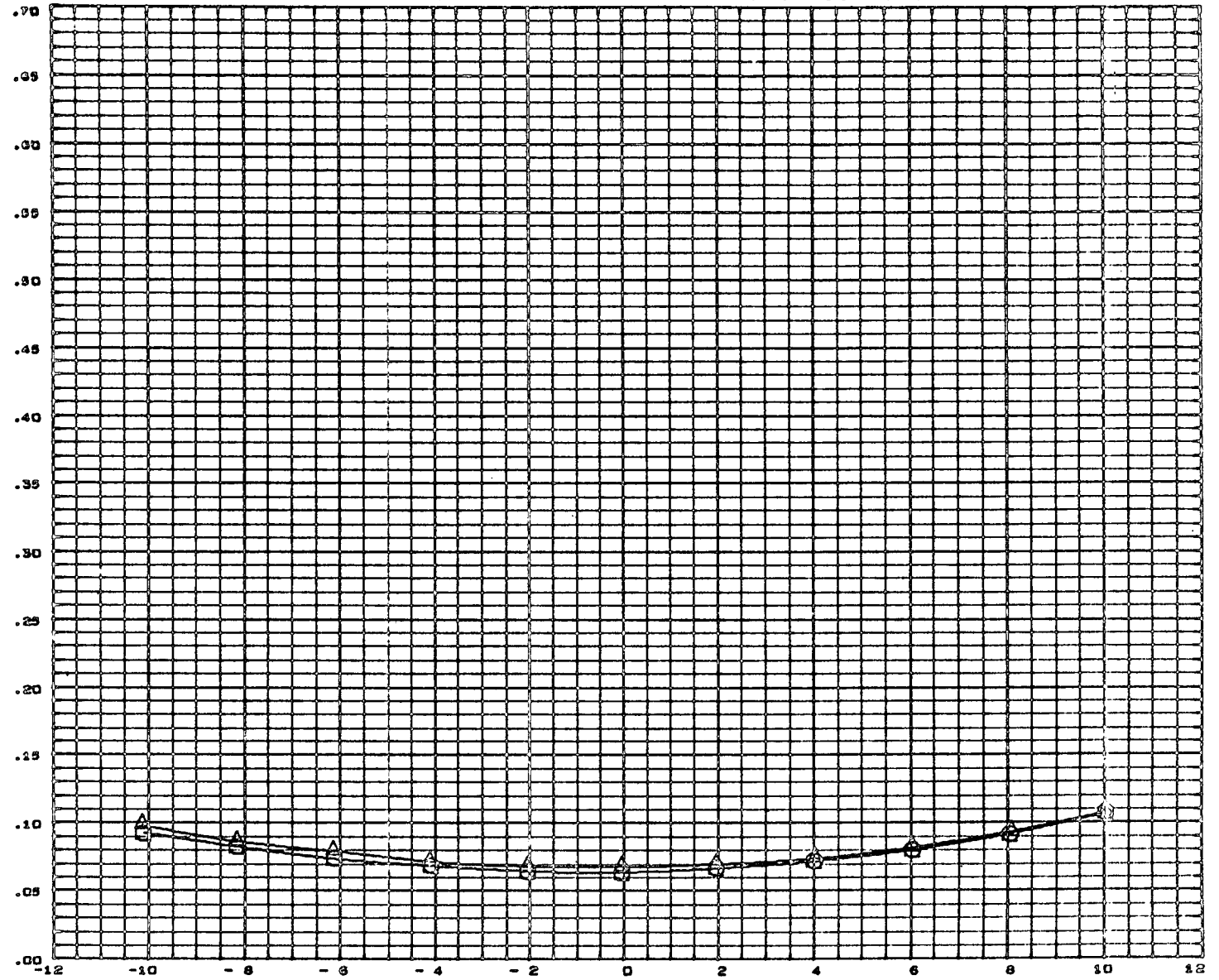


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	90 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

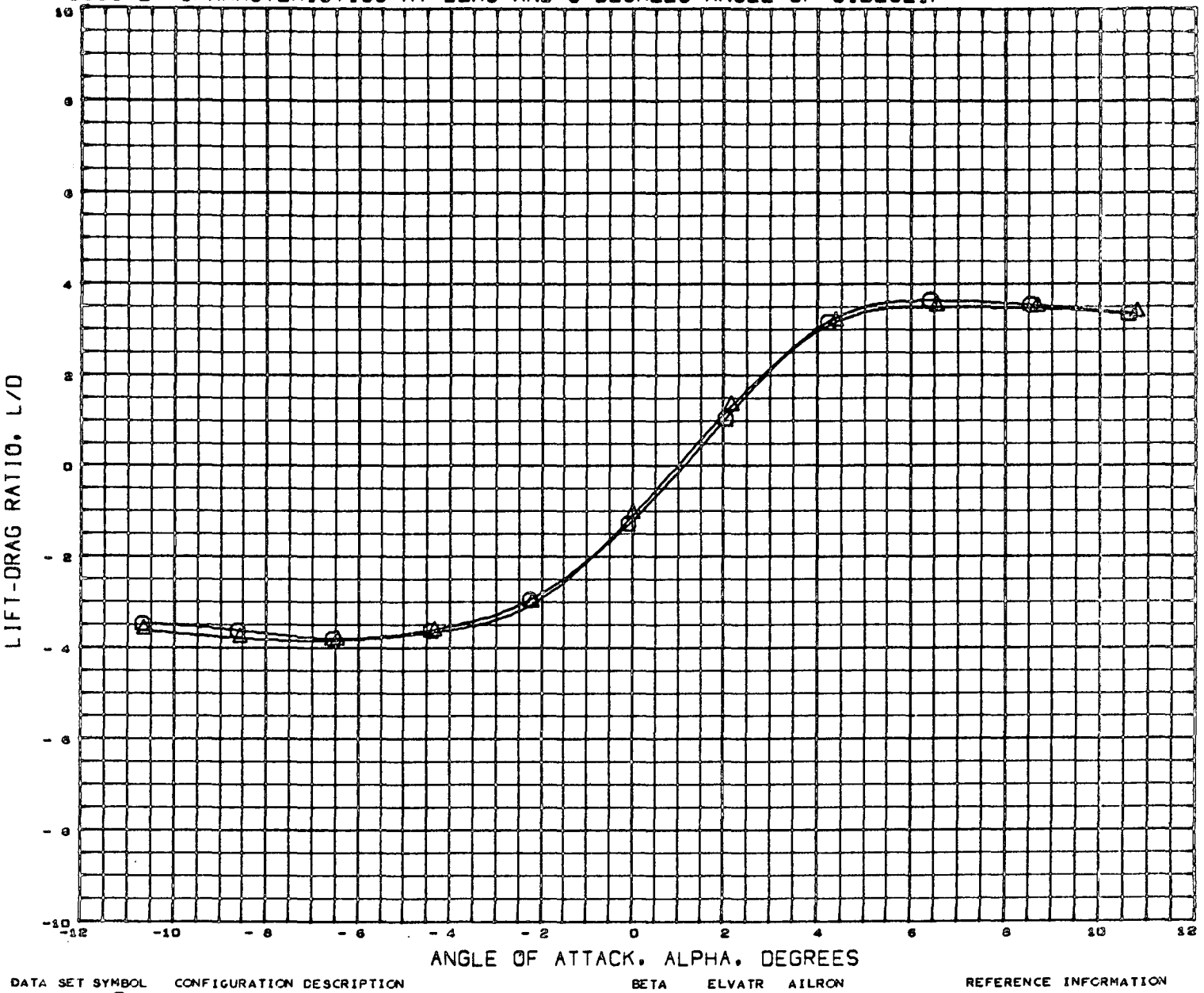
BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

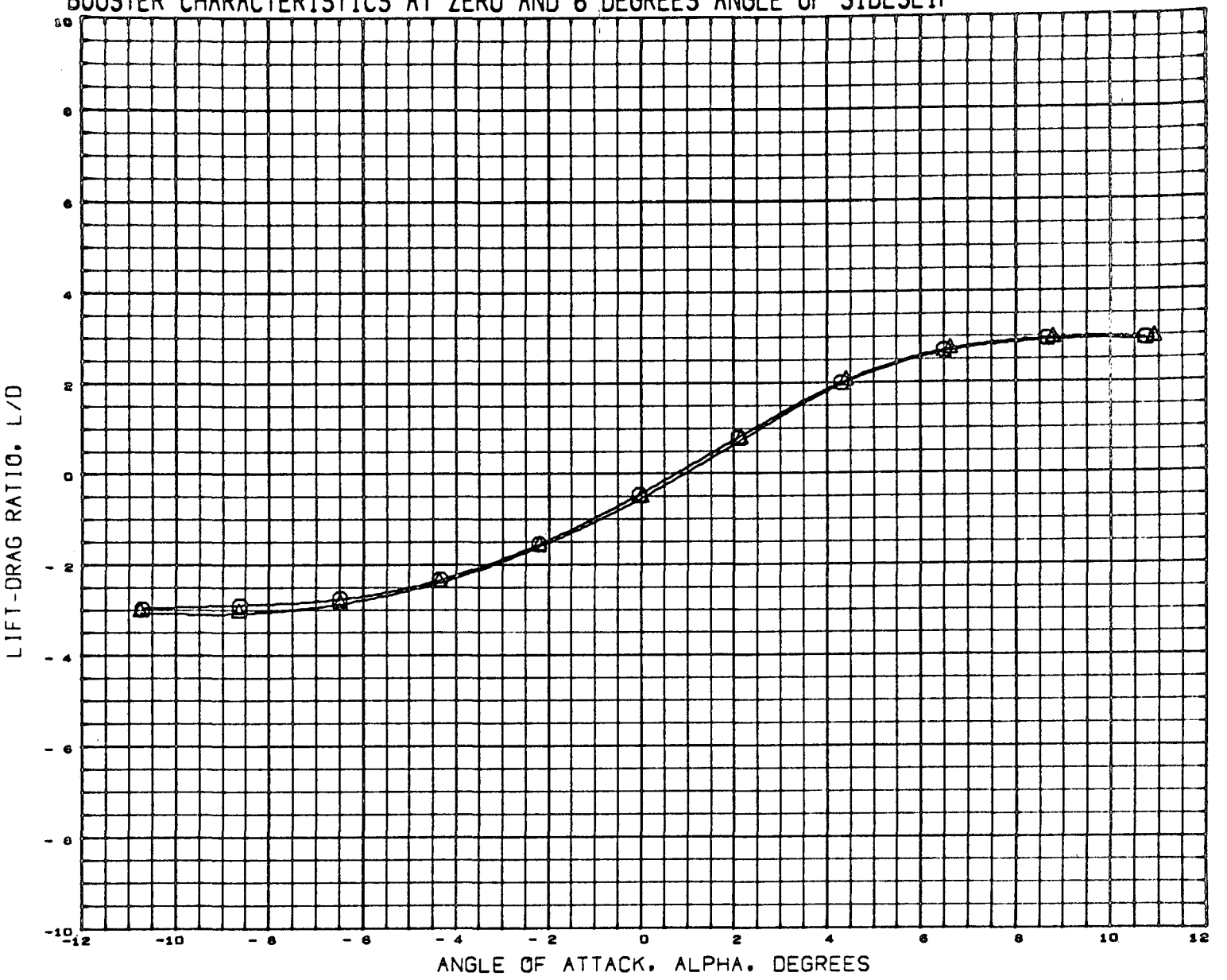


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



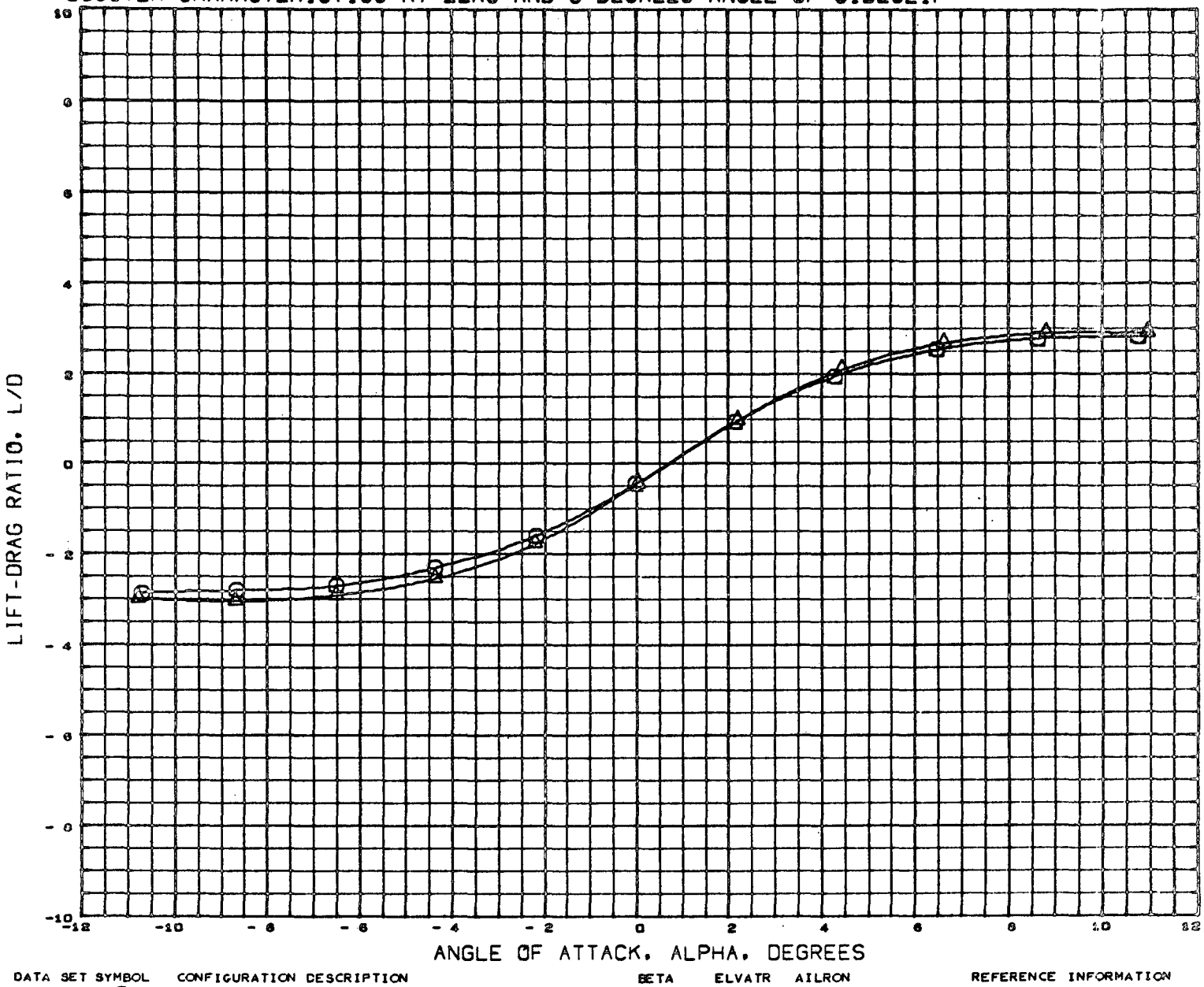
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

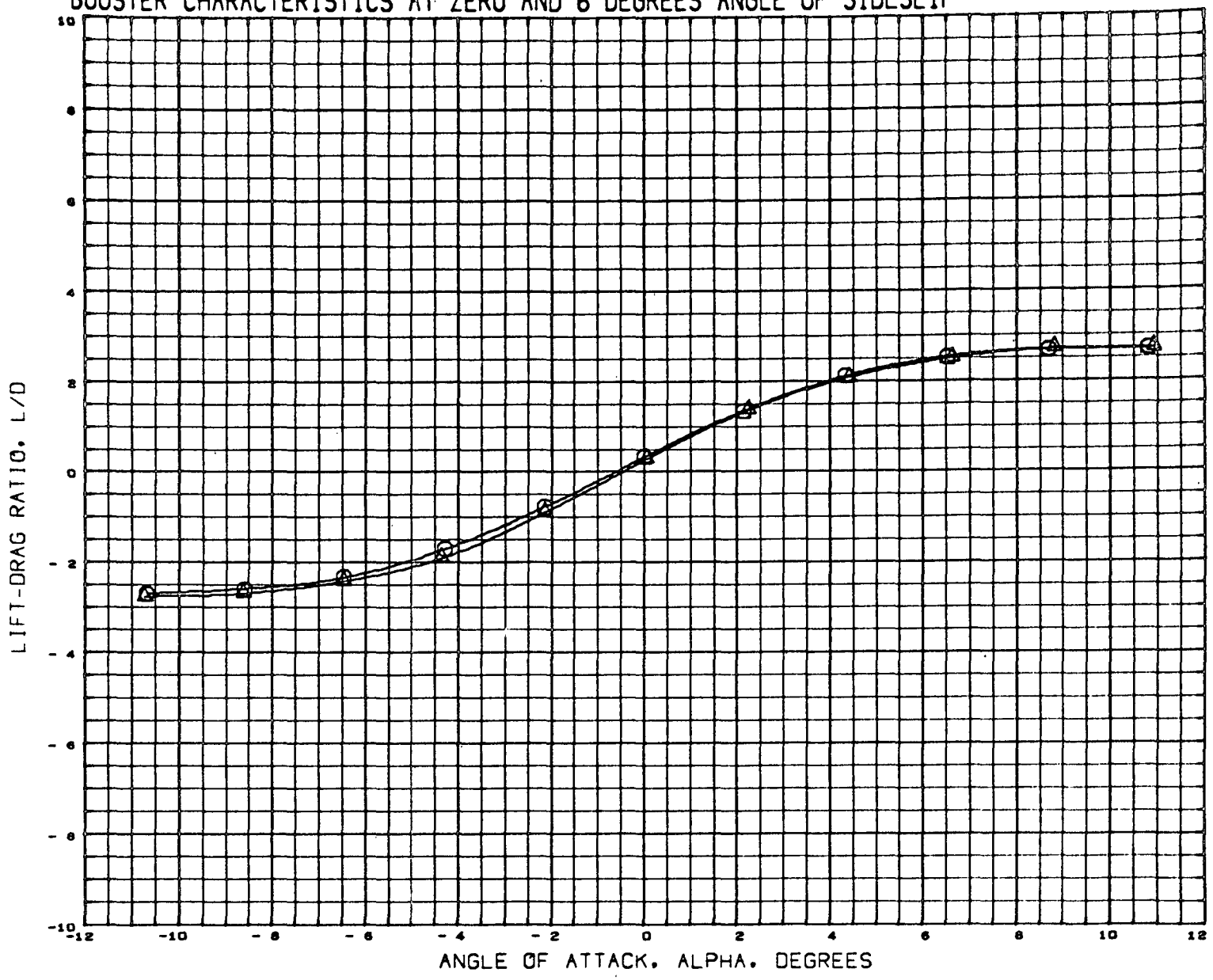


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

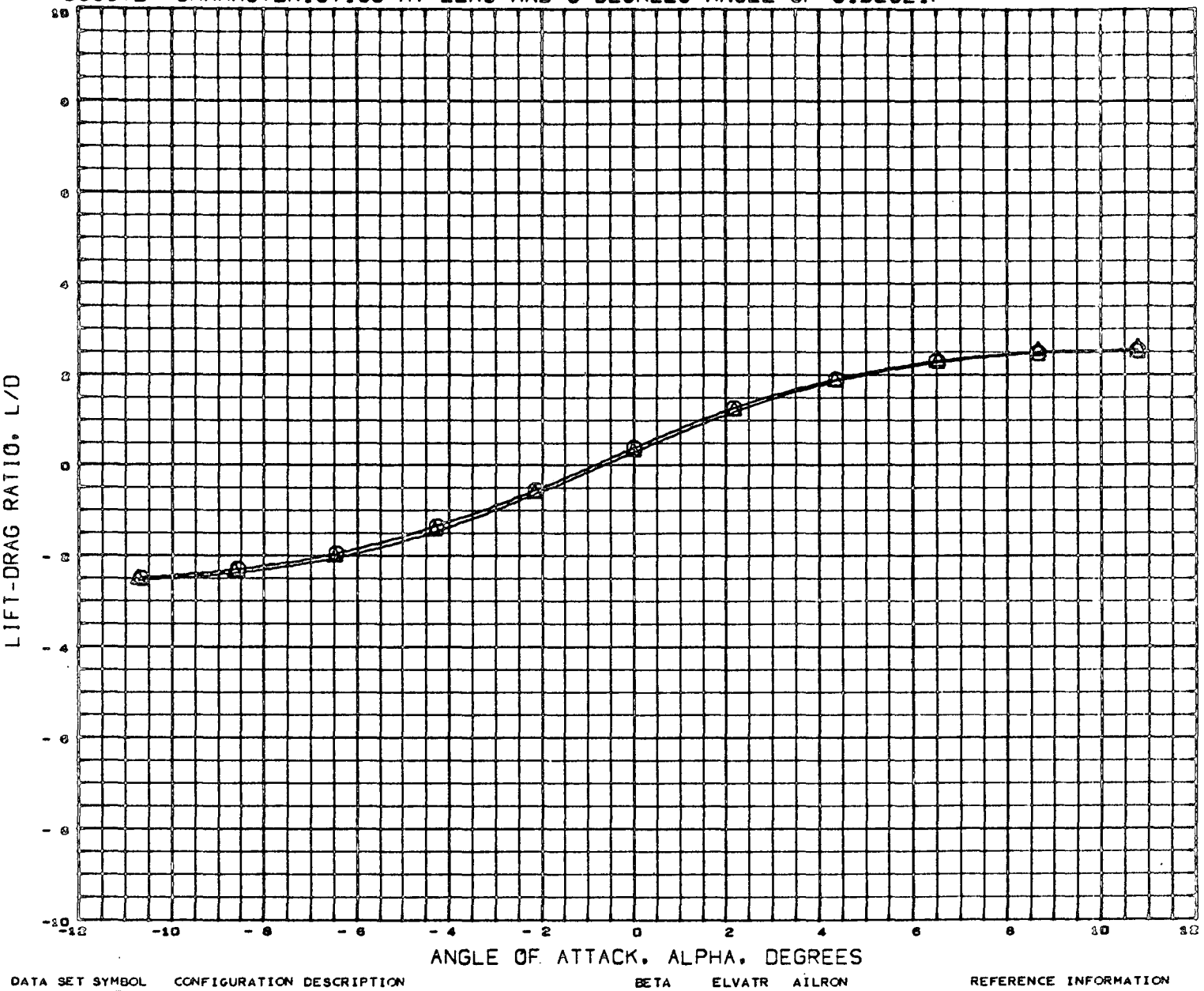


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

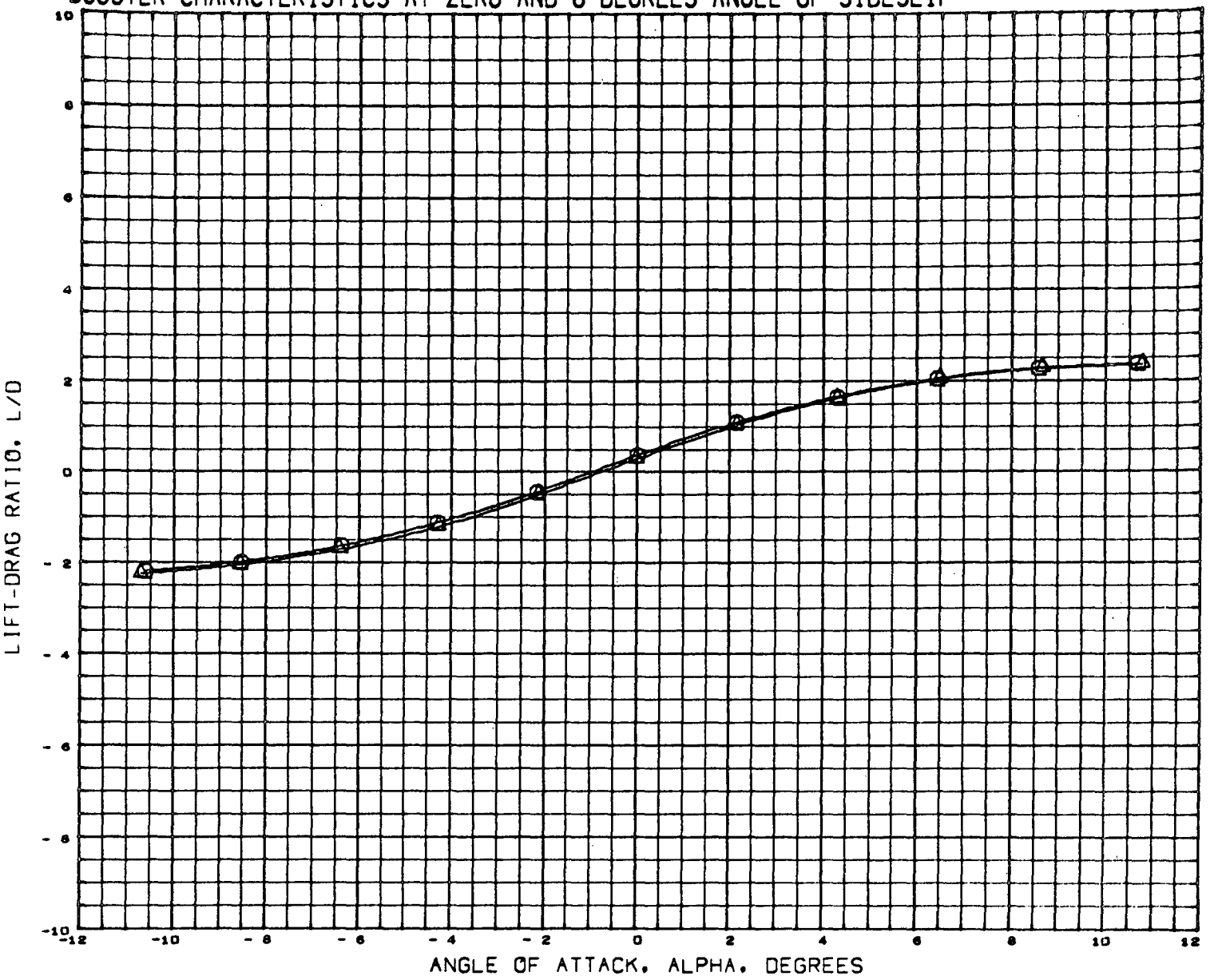


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

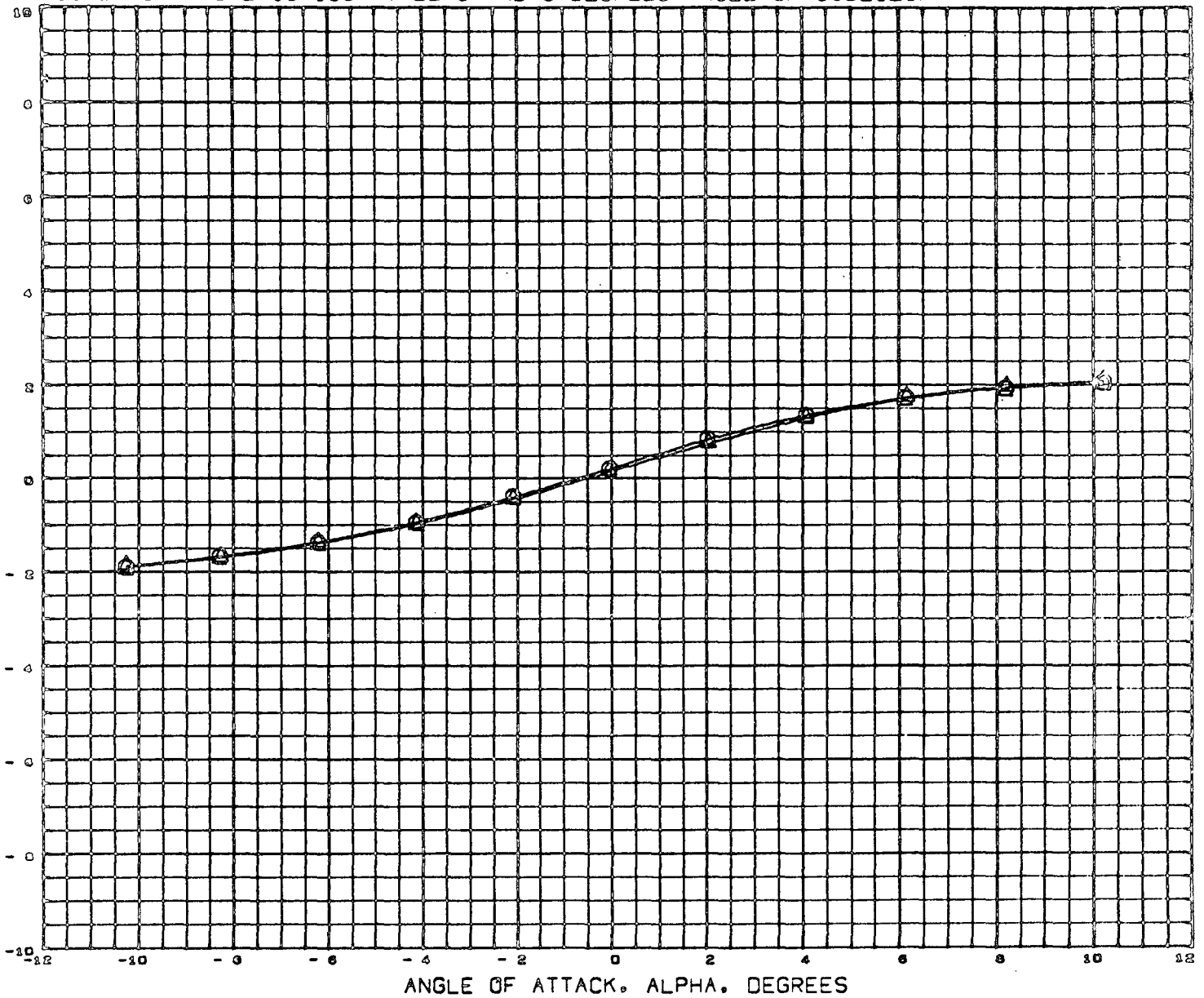


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

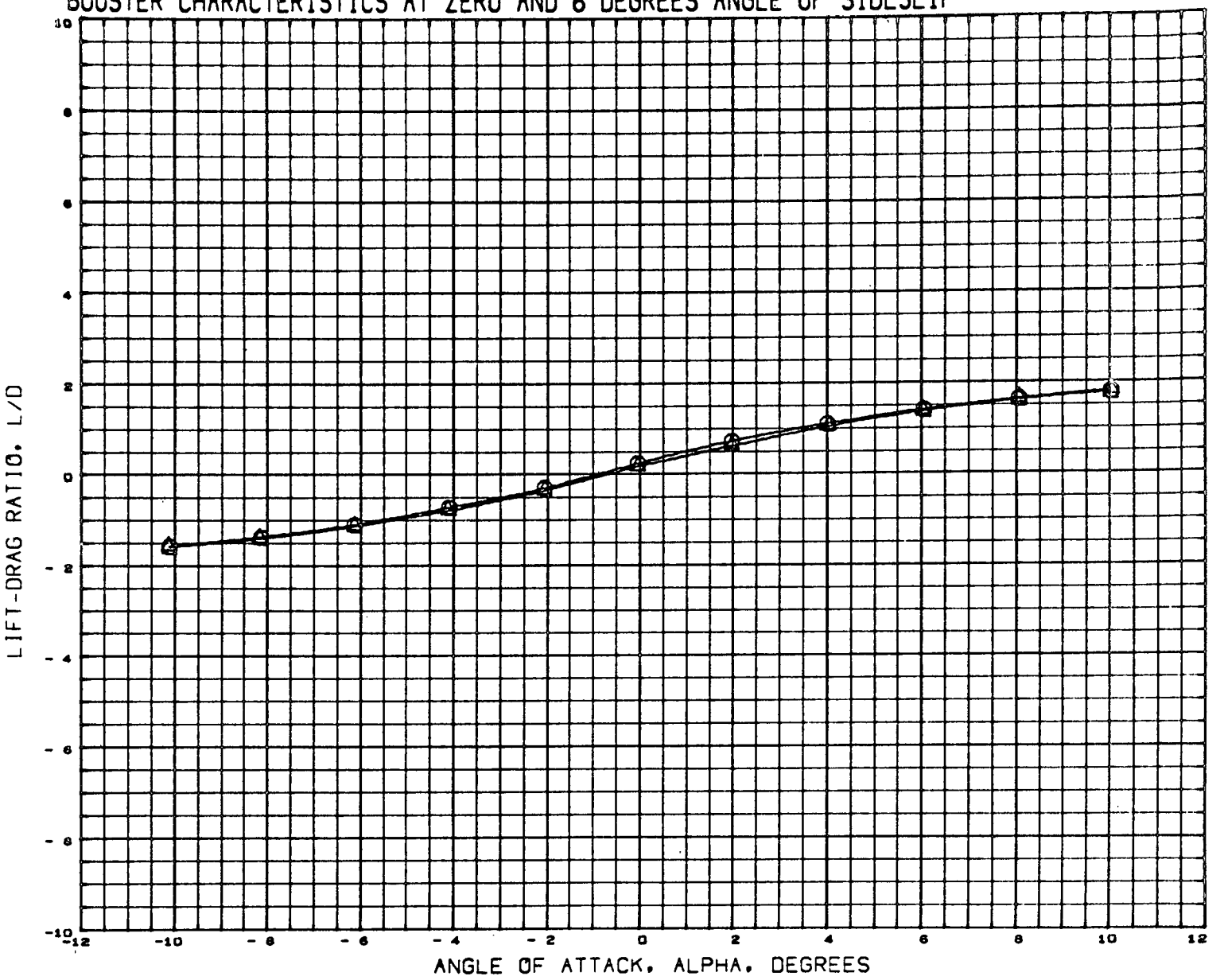


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(M3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



DATA SET SYMBOL		CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(H3207A)	⊠	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.0960	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

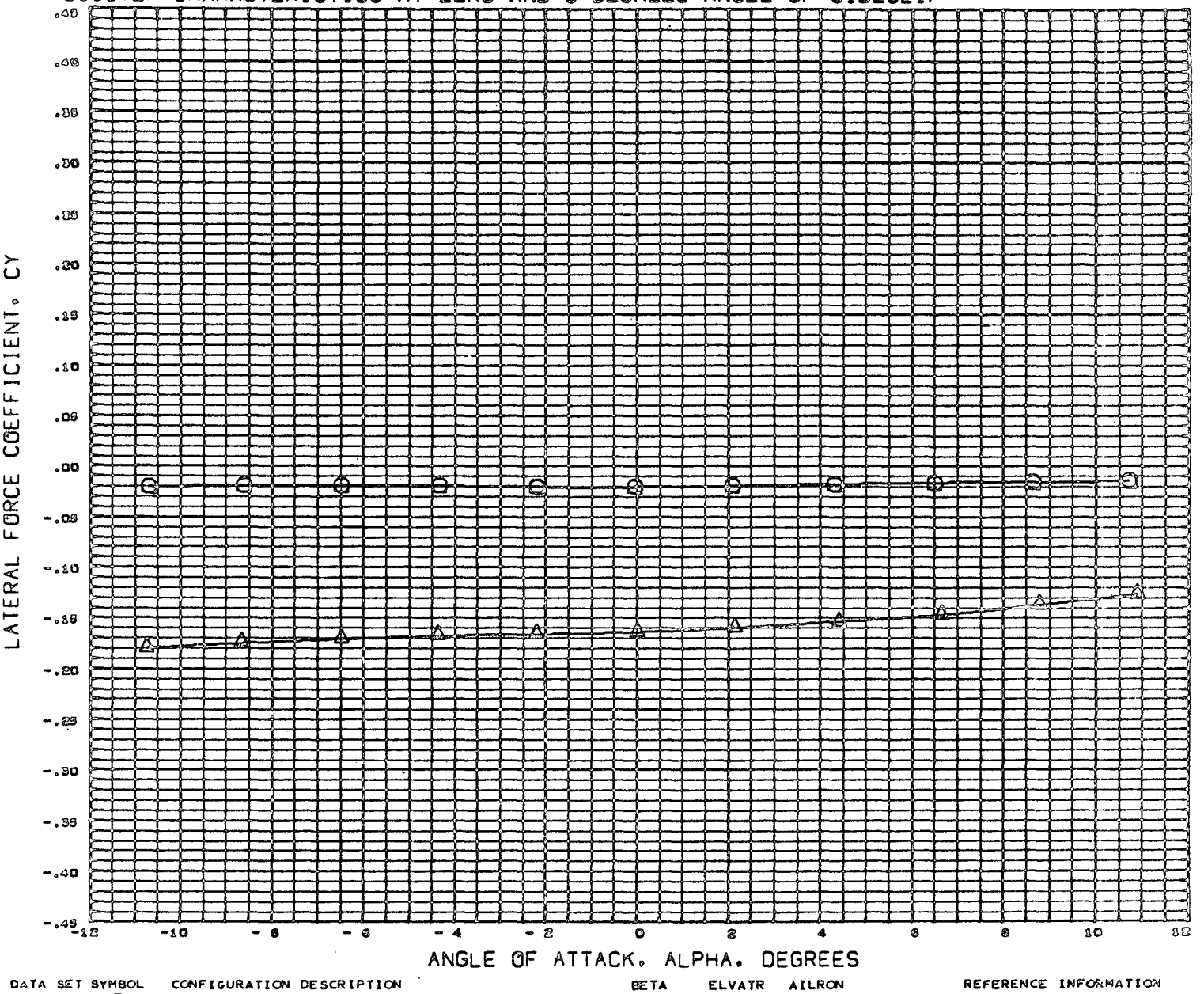
BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

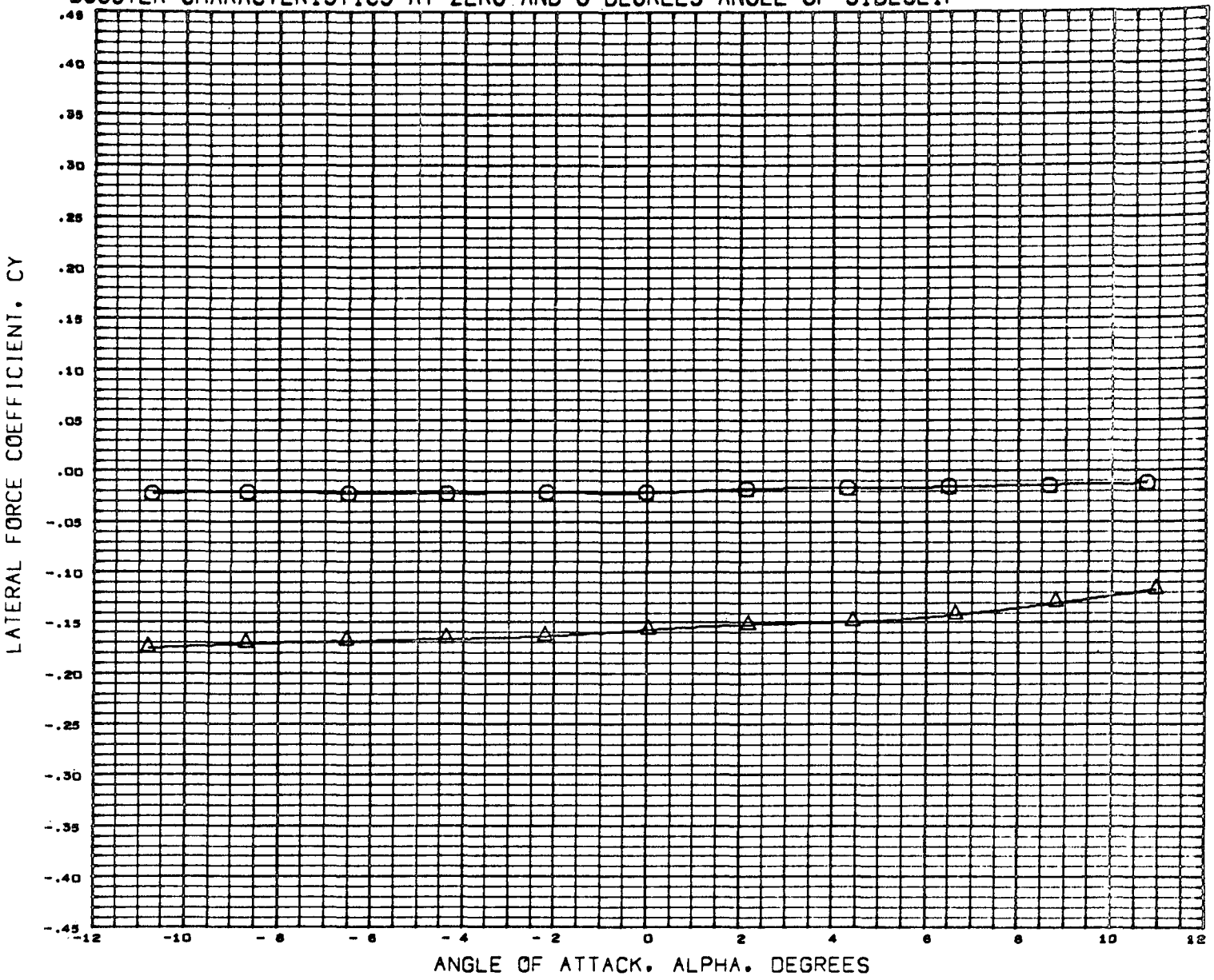


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

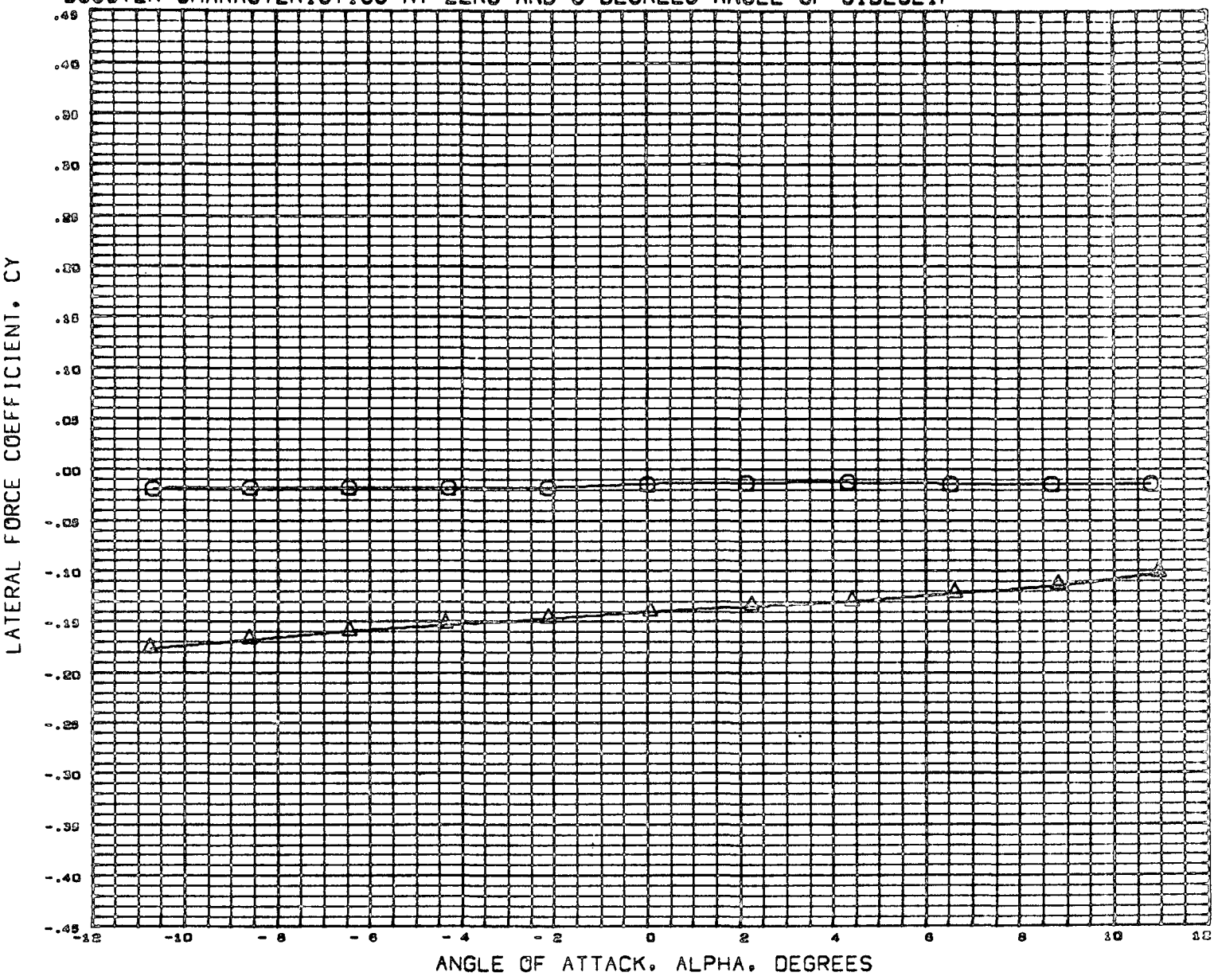


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

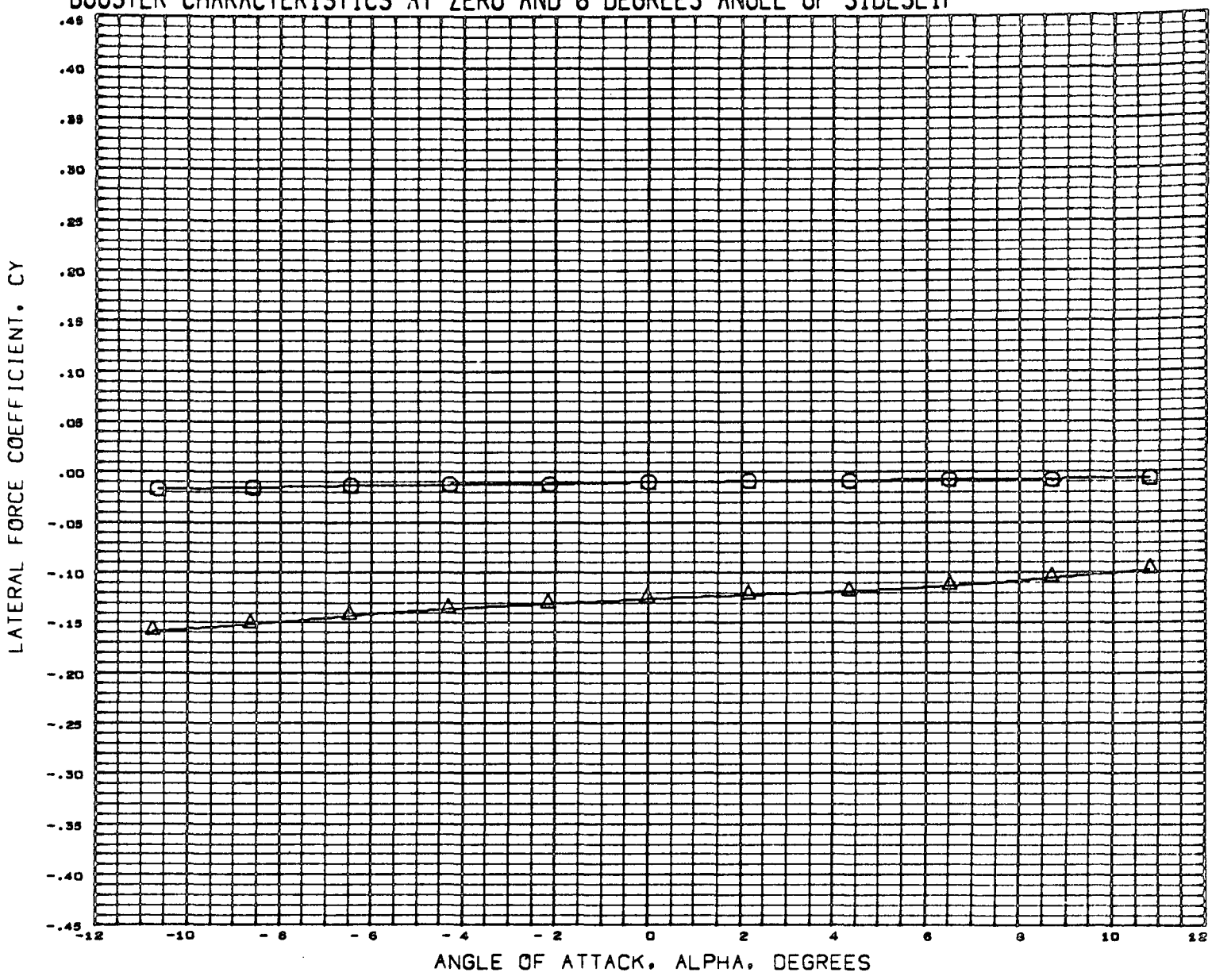


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.0560	90 IN
LREF	3.0950	INCHES
BREF	6.0950	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

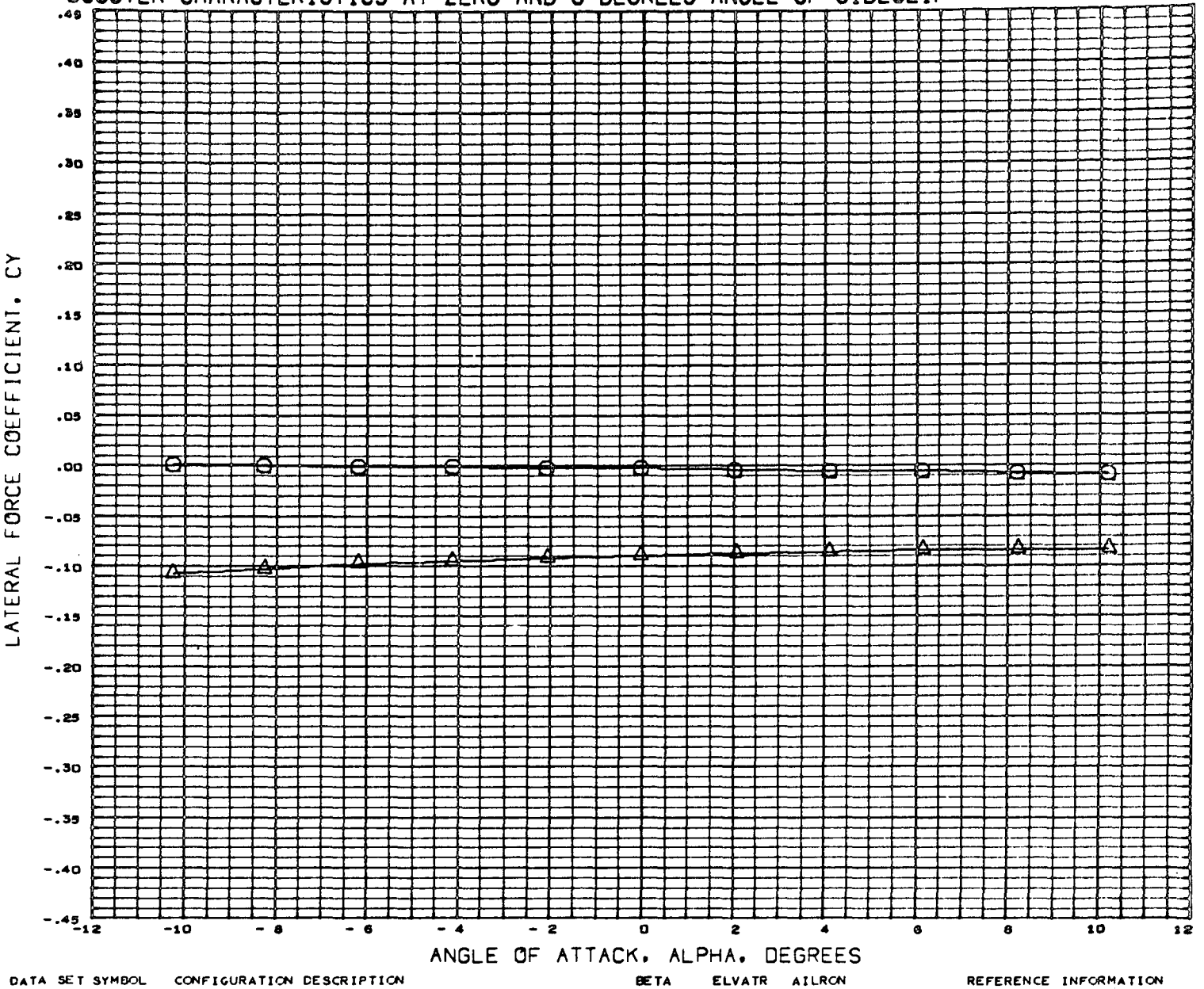
BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3209A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0590	INCHES
BREF	6.0590	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

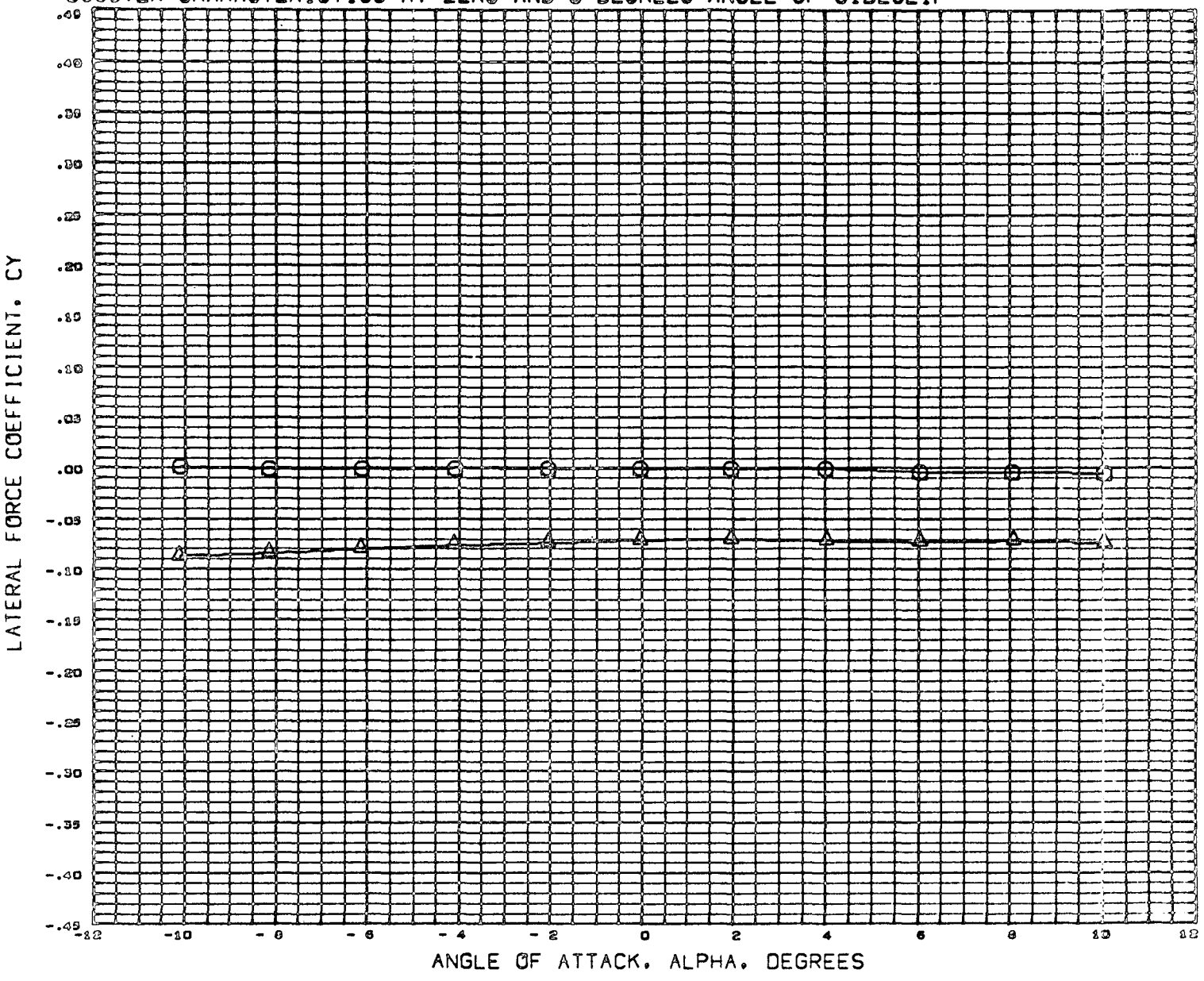


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

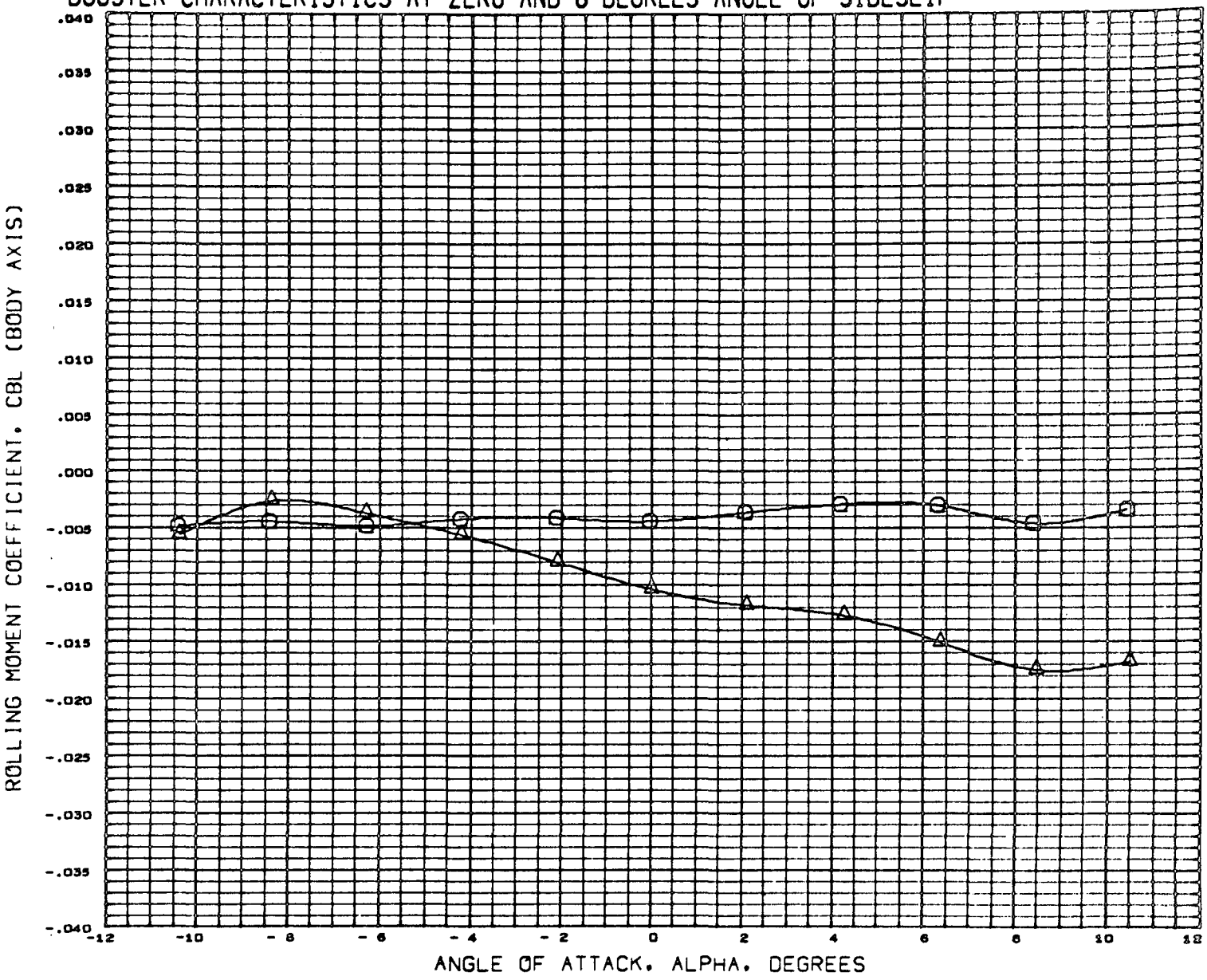


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

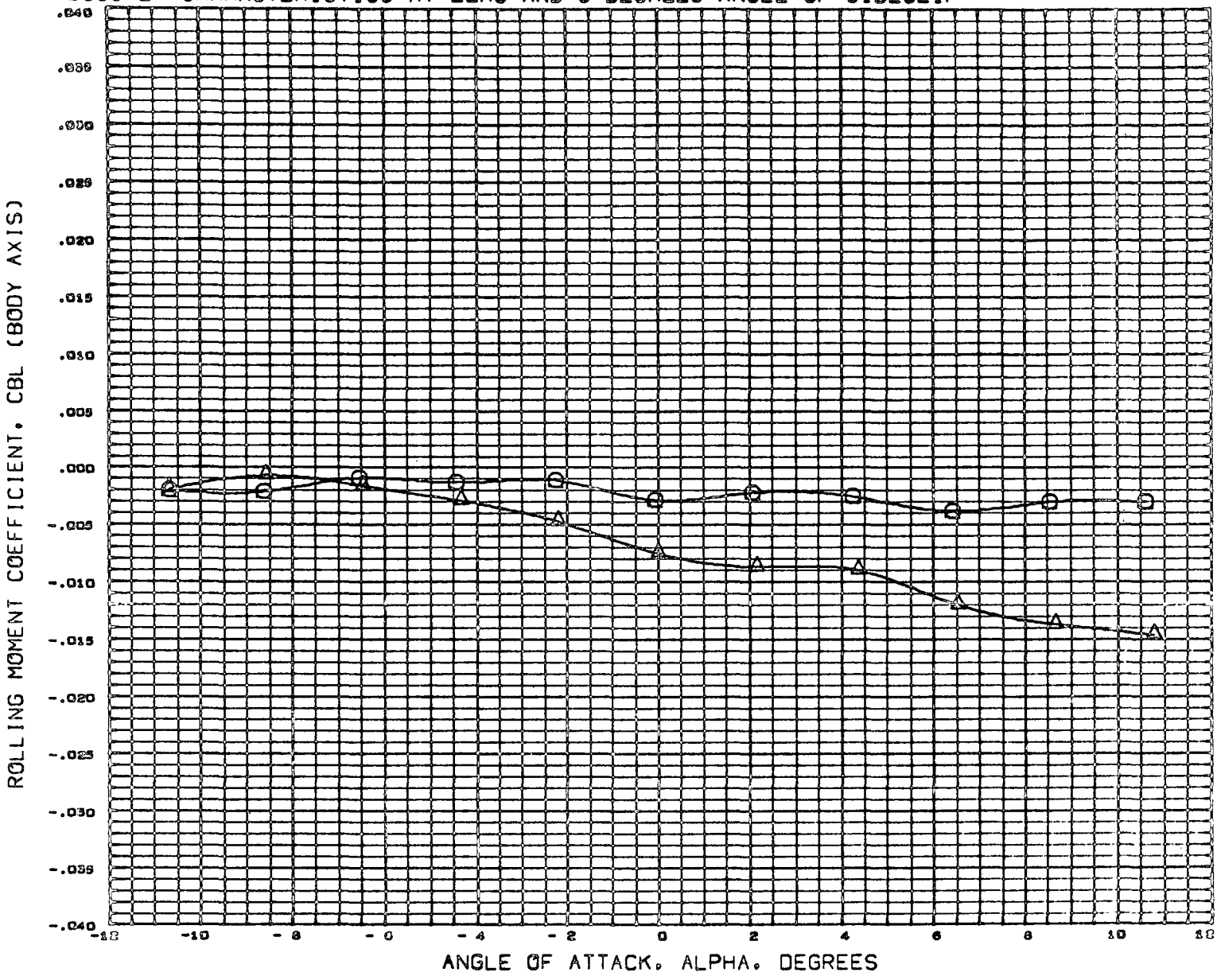


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER 320C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER 820C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

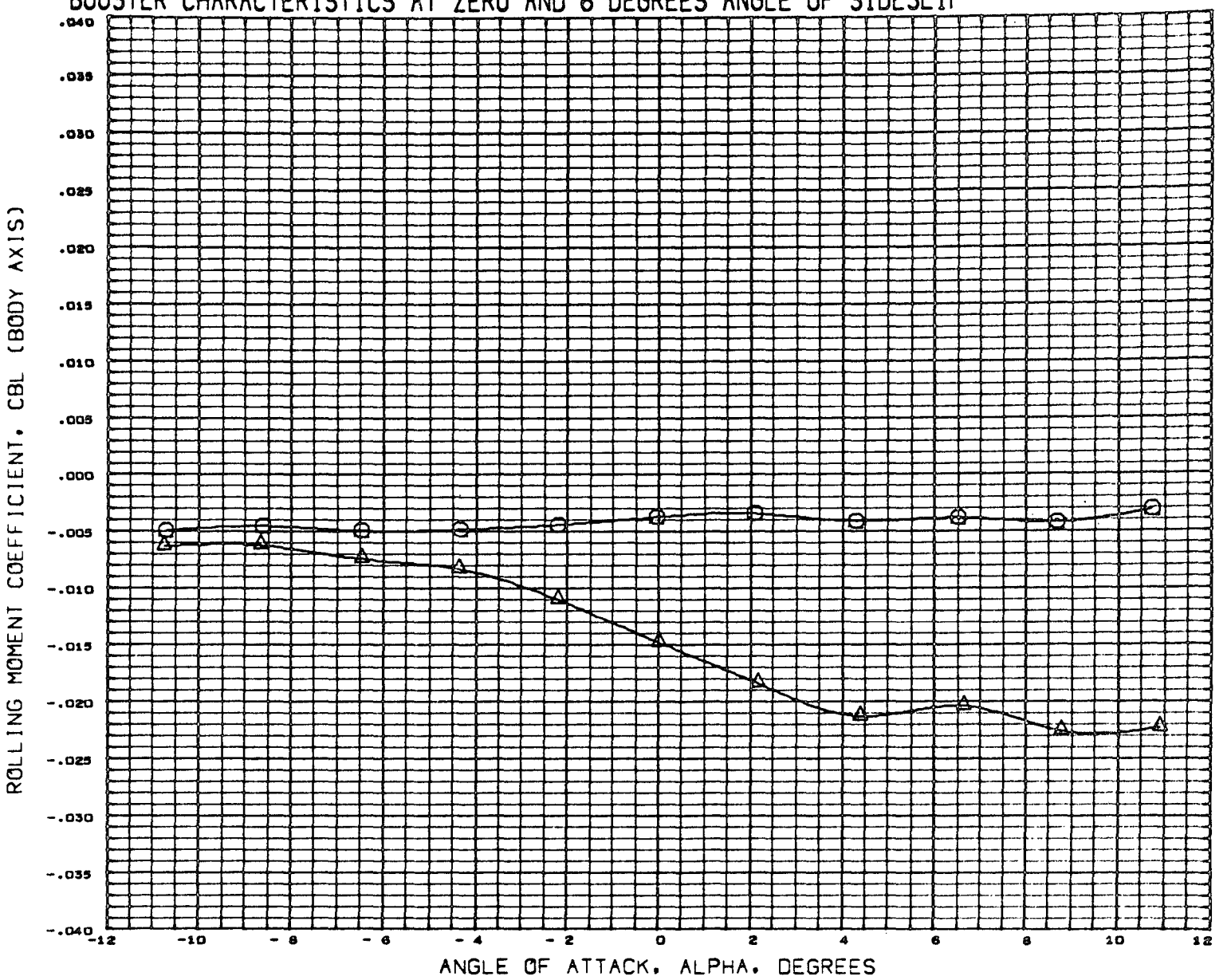


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

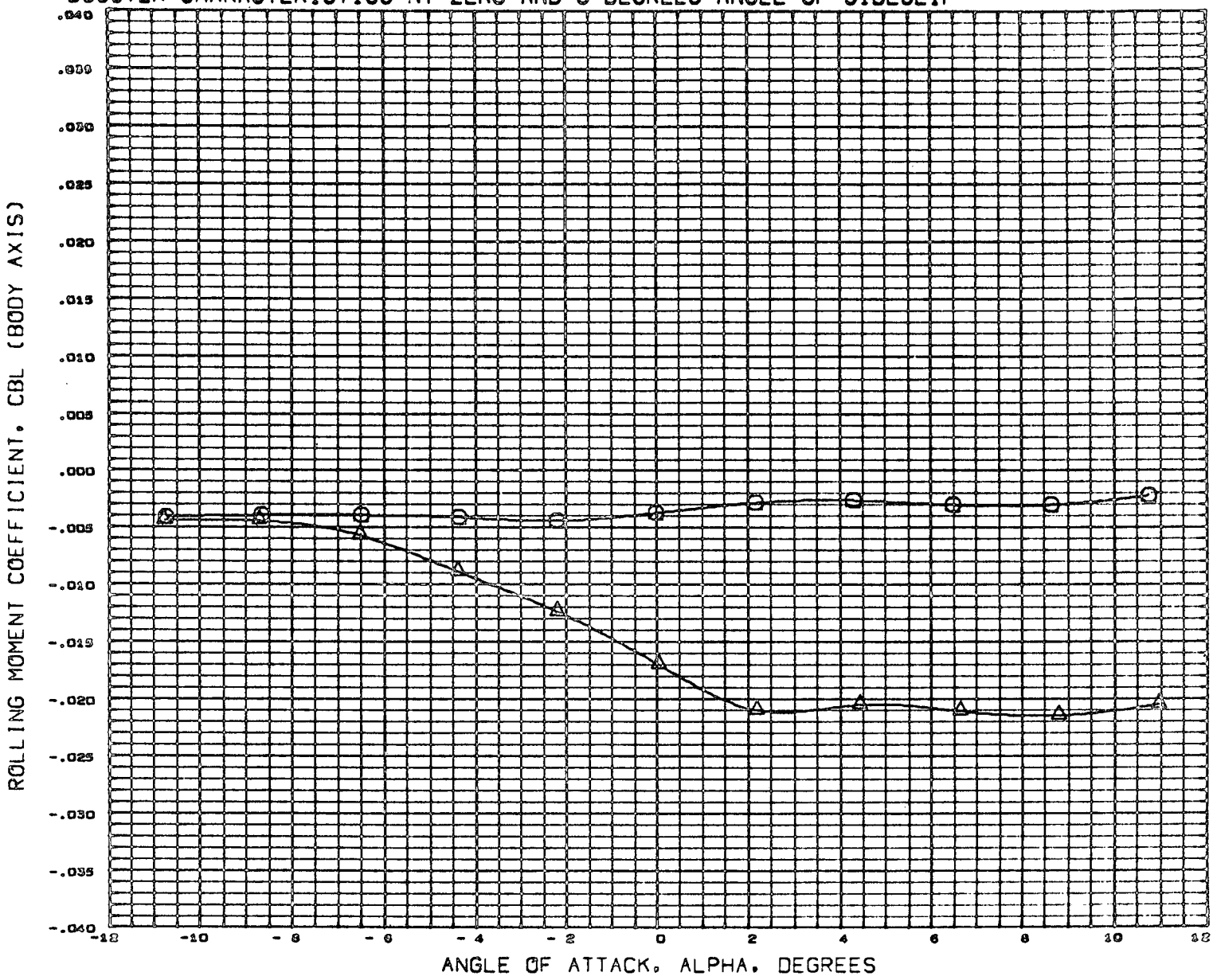


DATA SET SYMBOL		CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

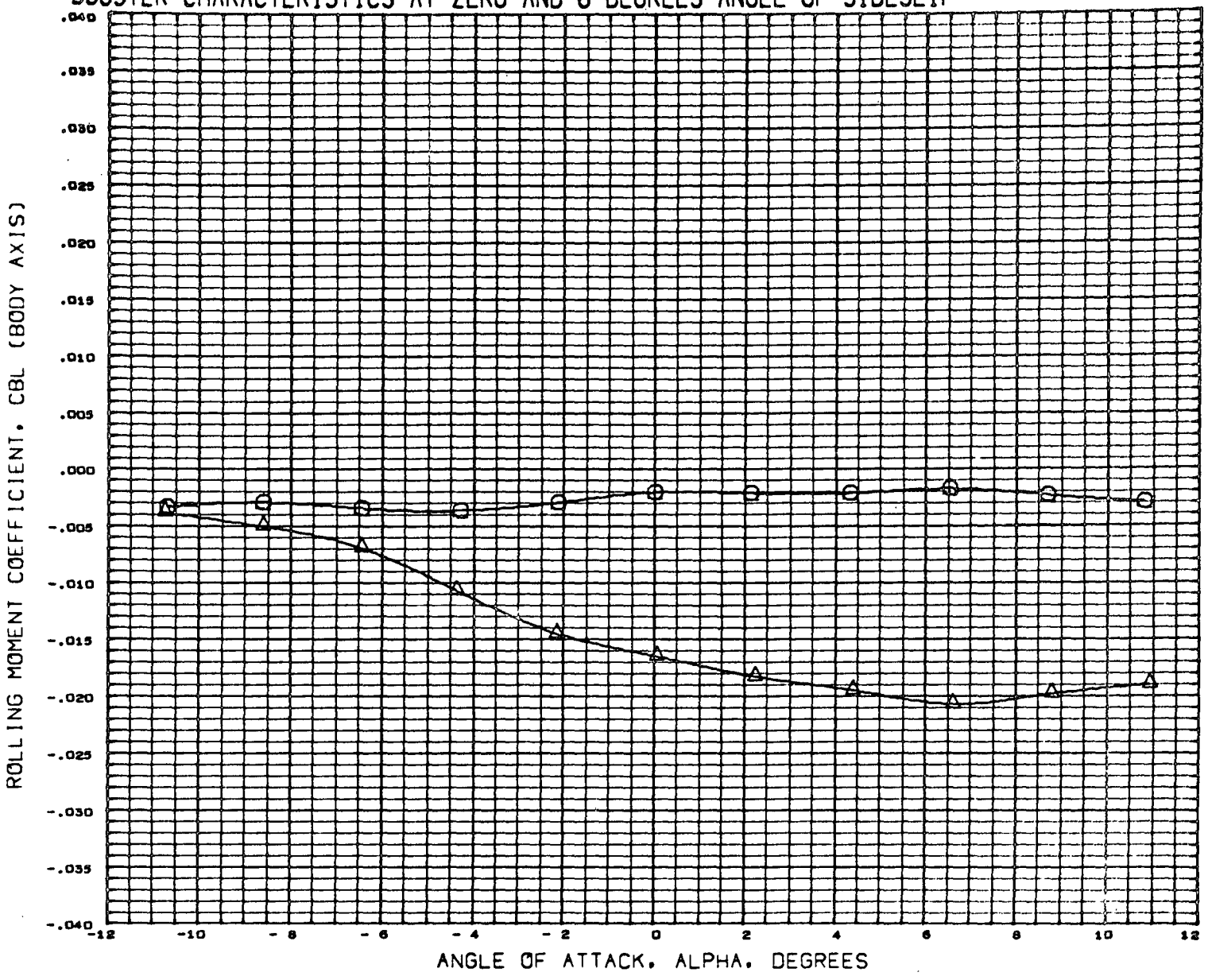


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

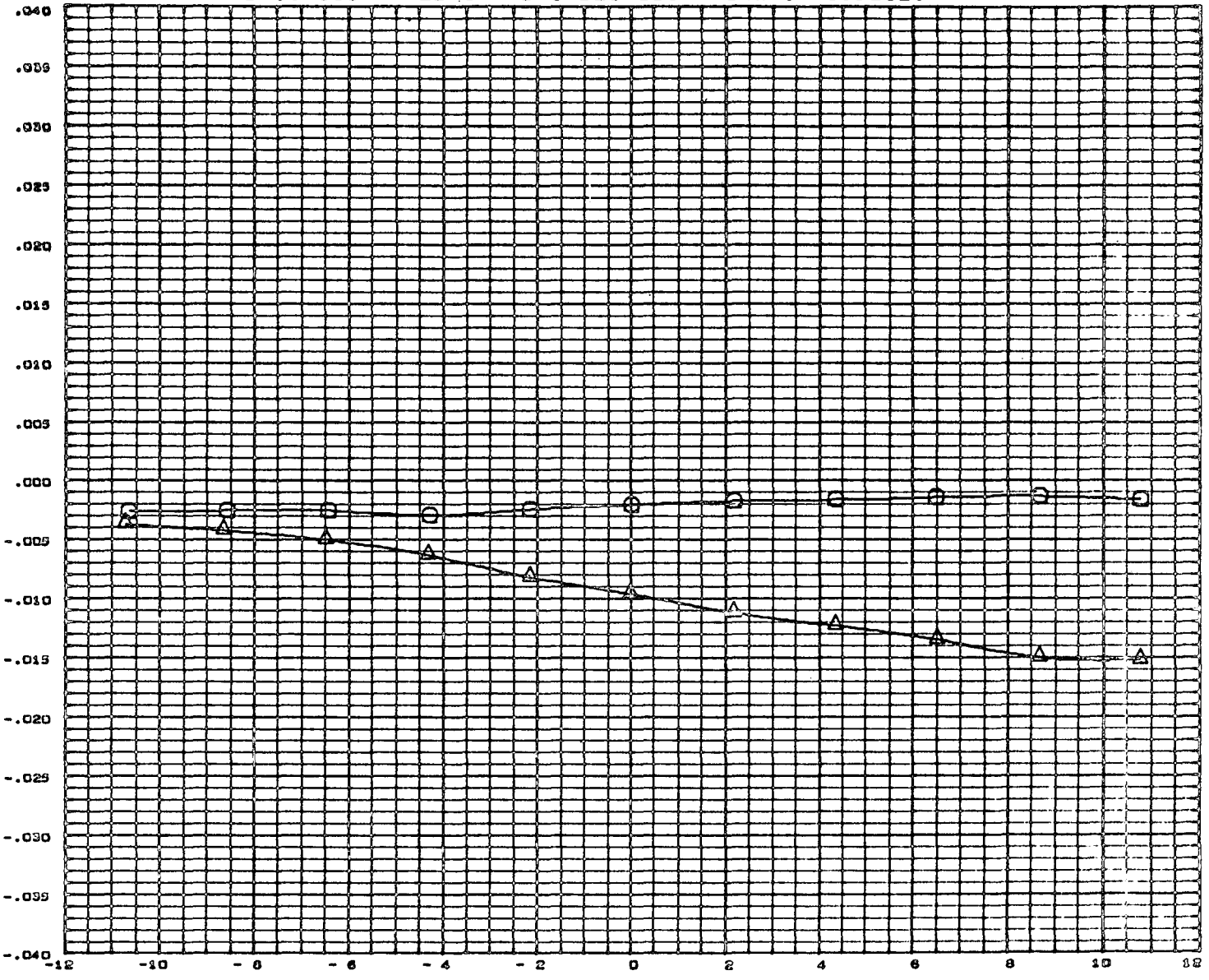


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

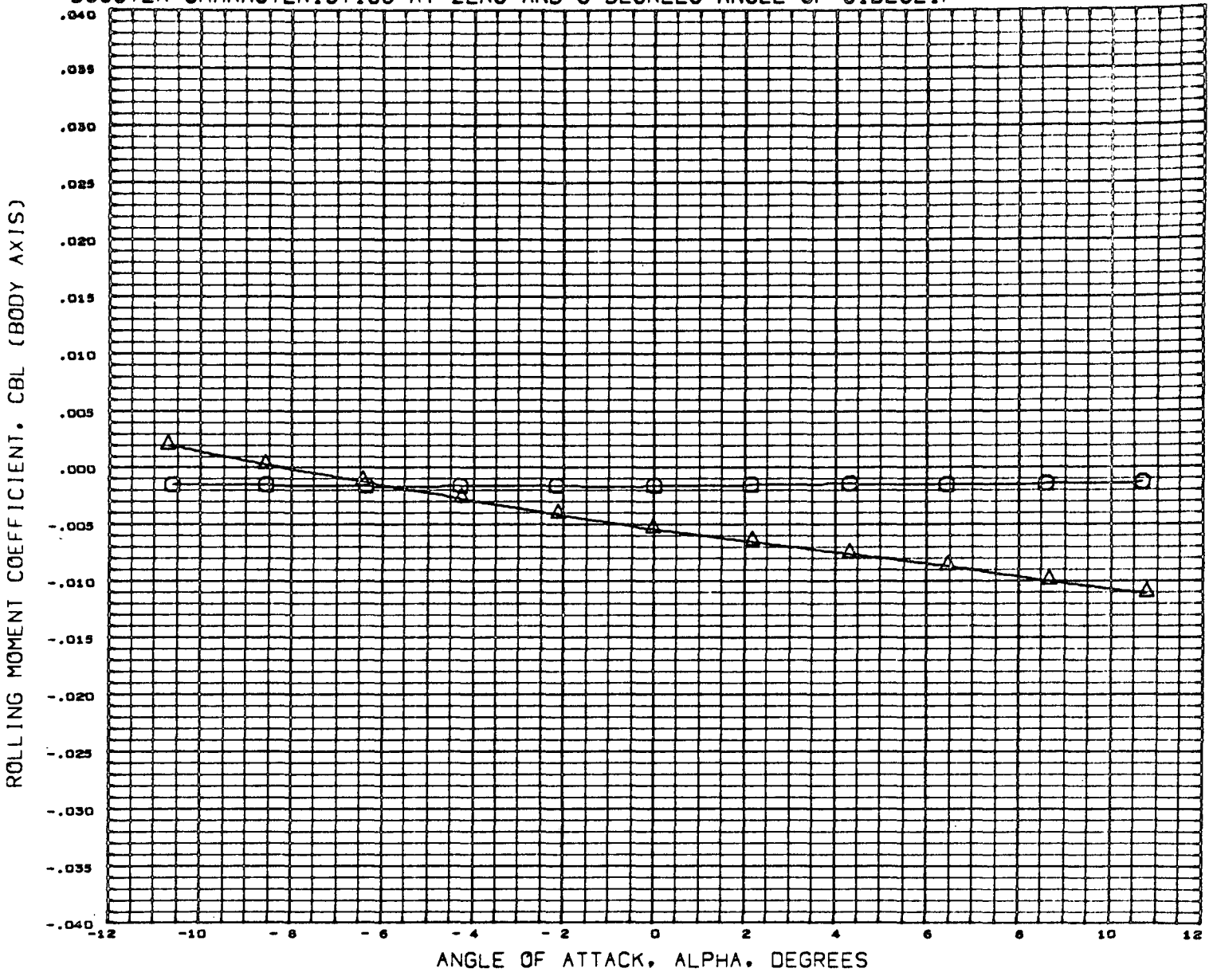


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

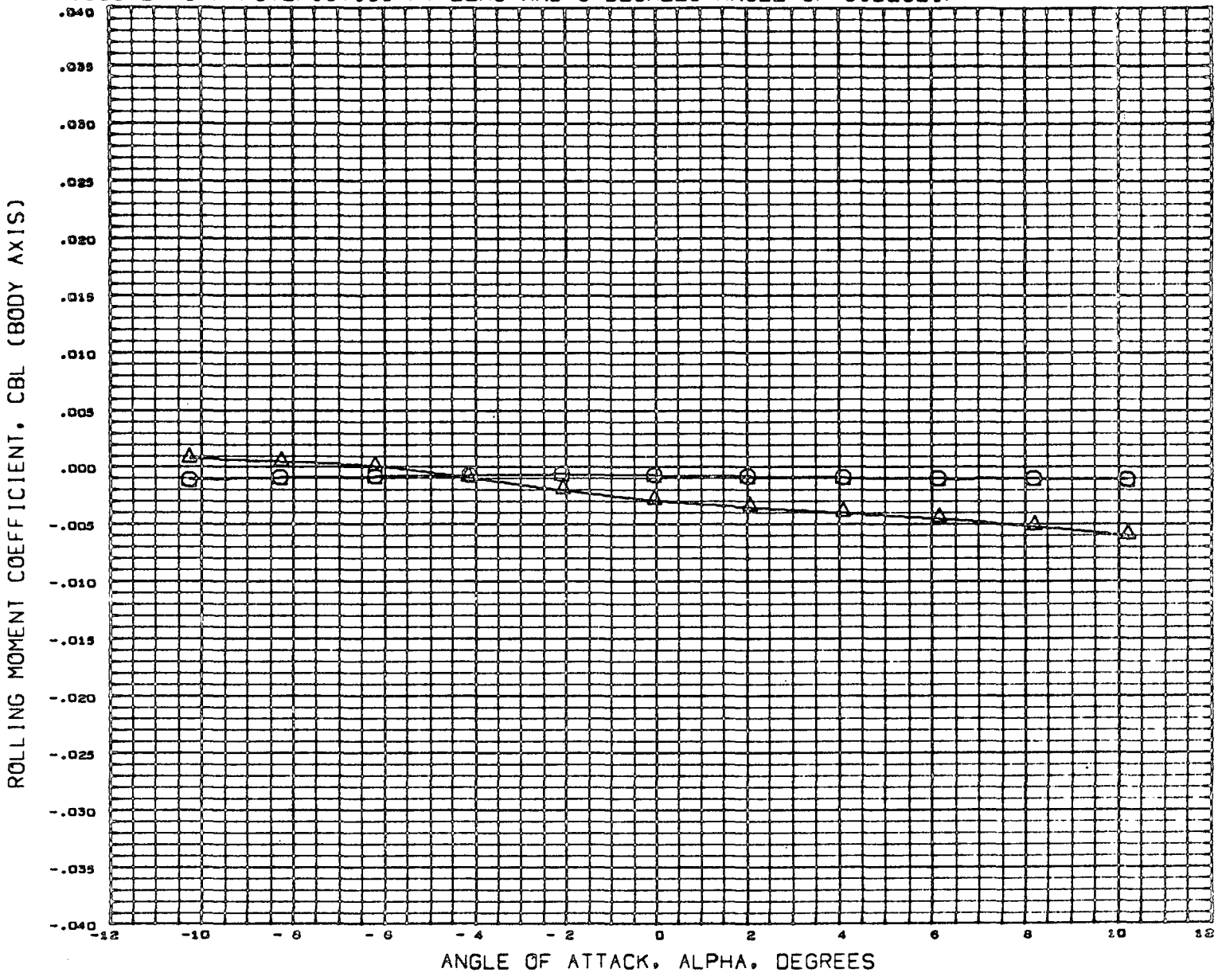


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

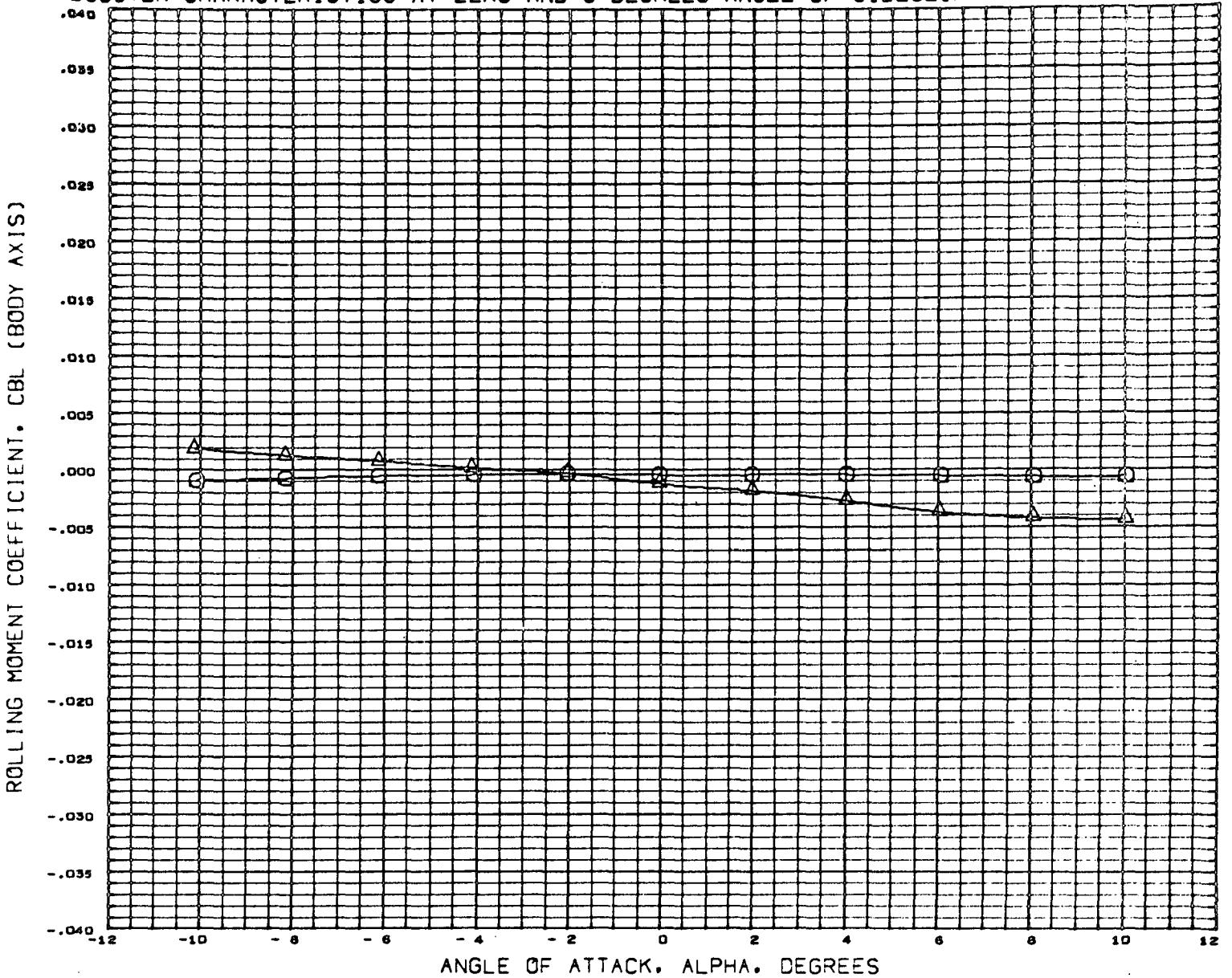


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

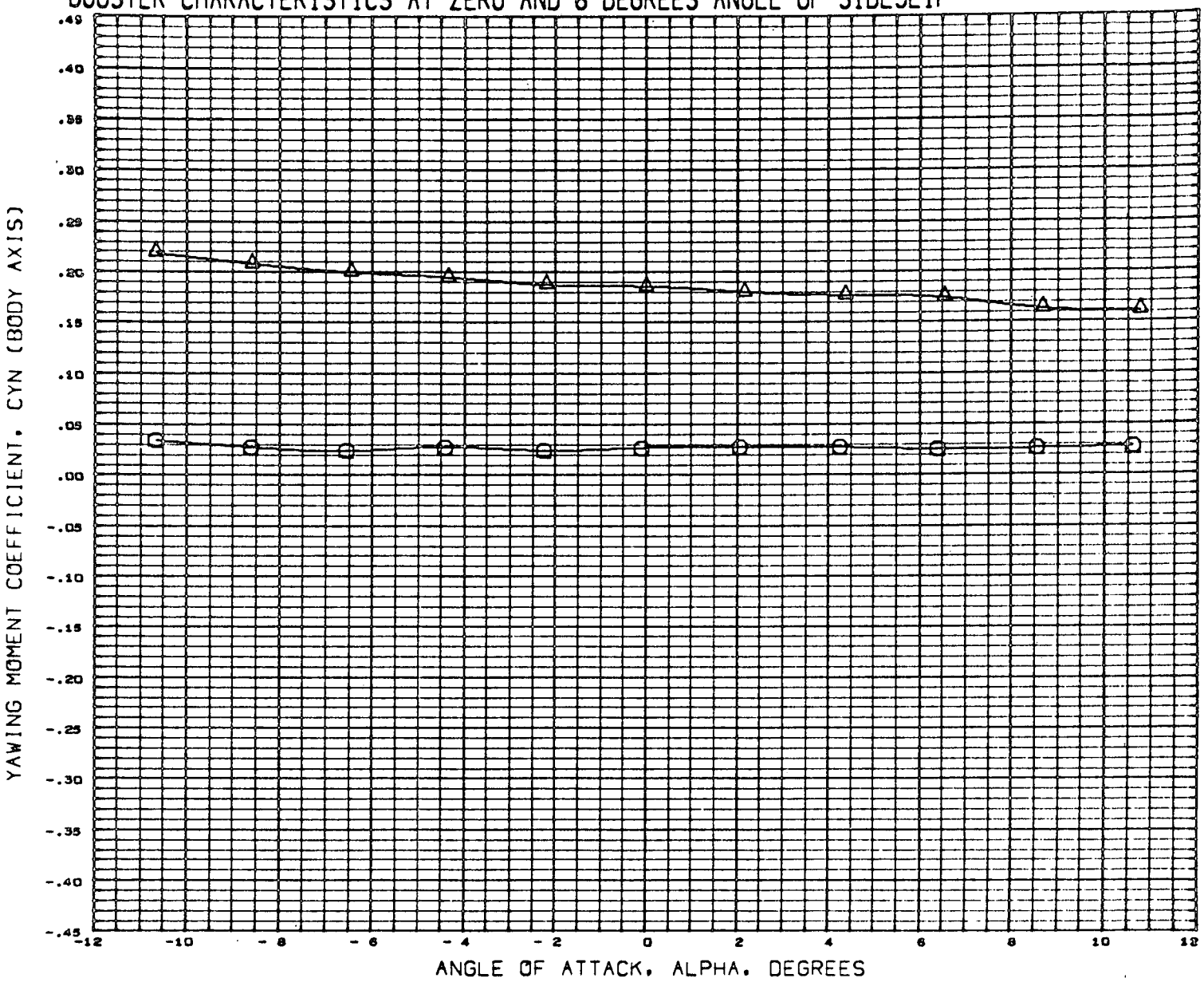
BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.606

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

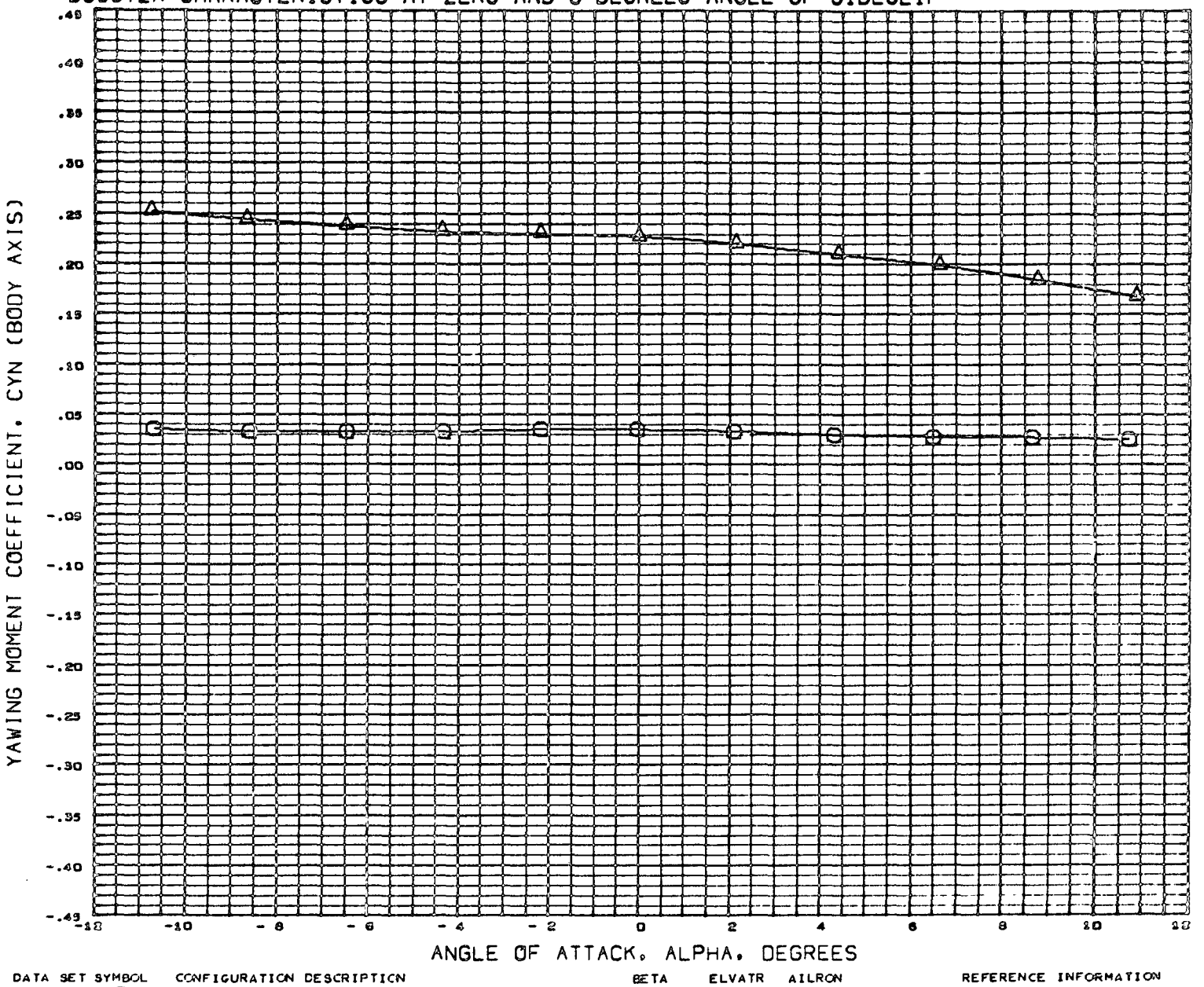


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.900

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

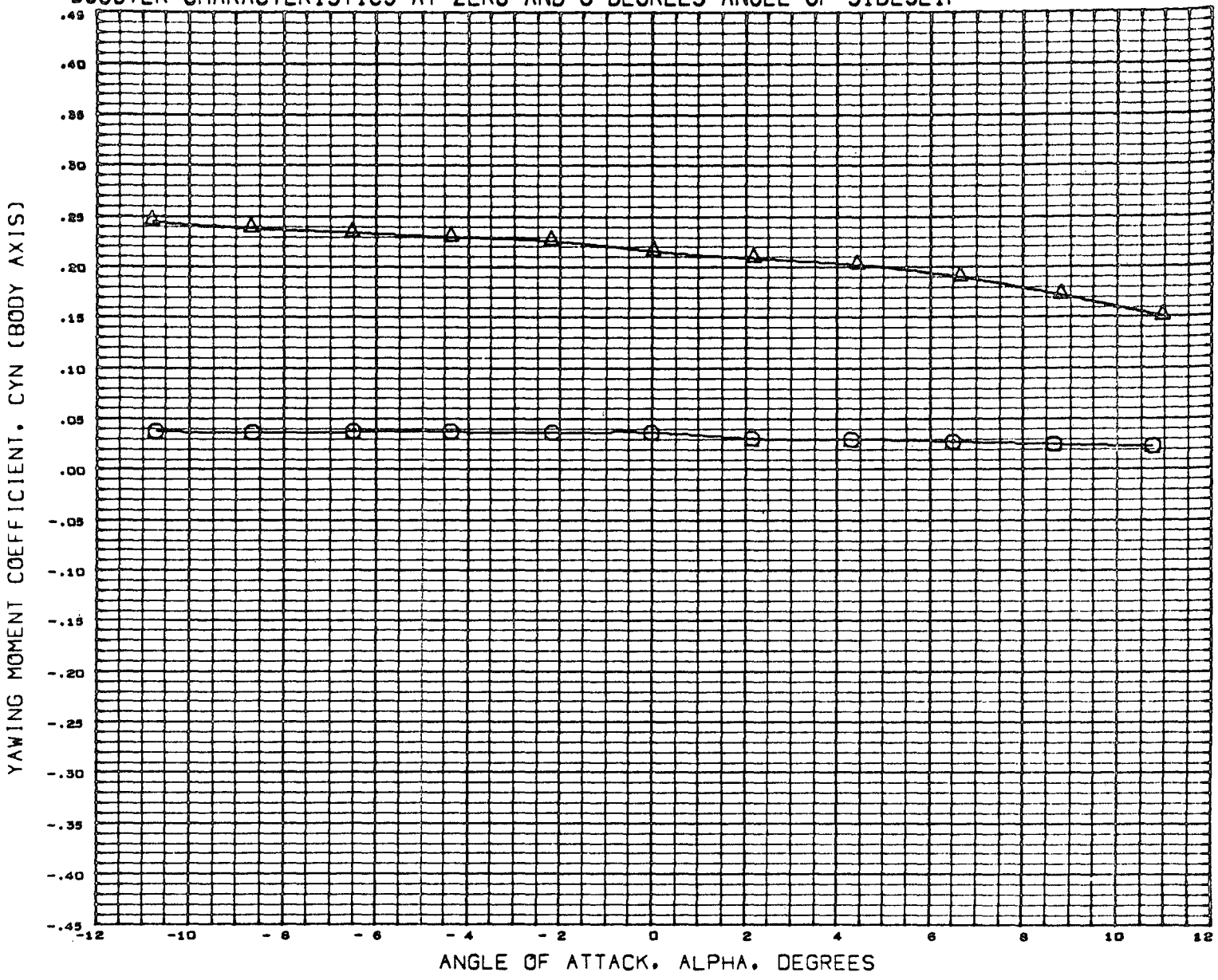


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 0.998

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



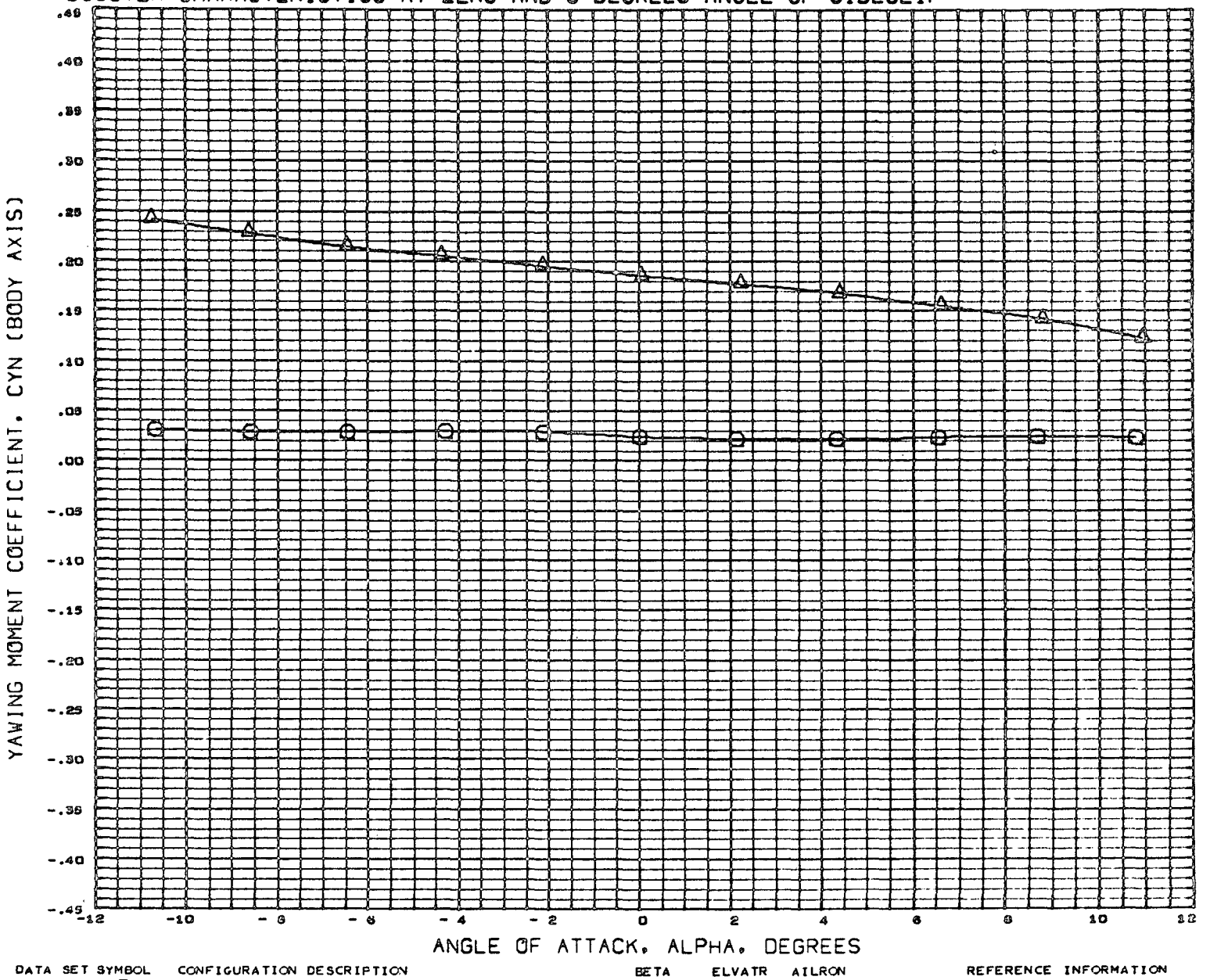
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.097

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

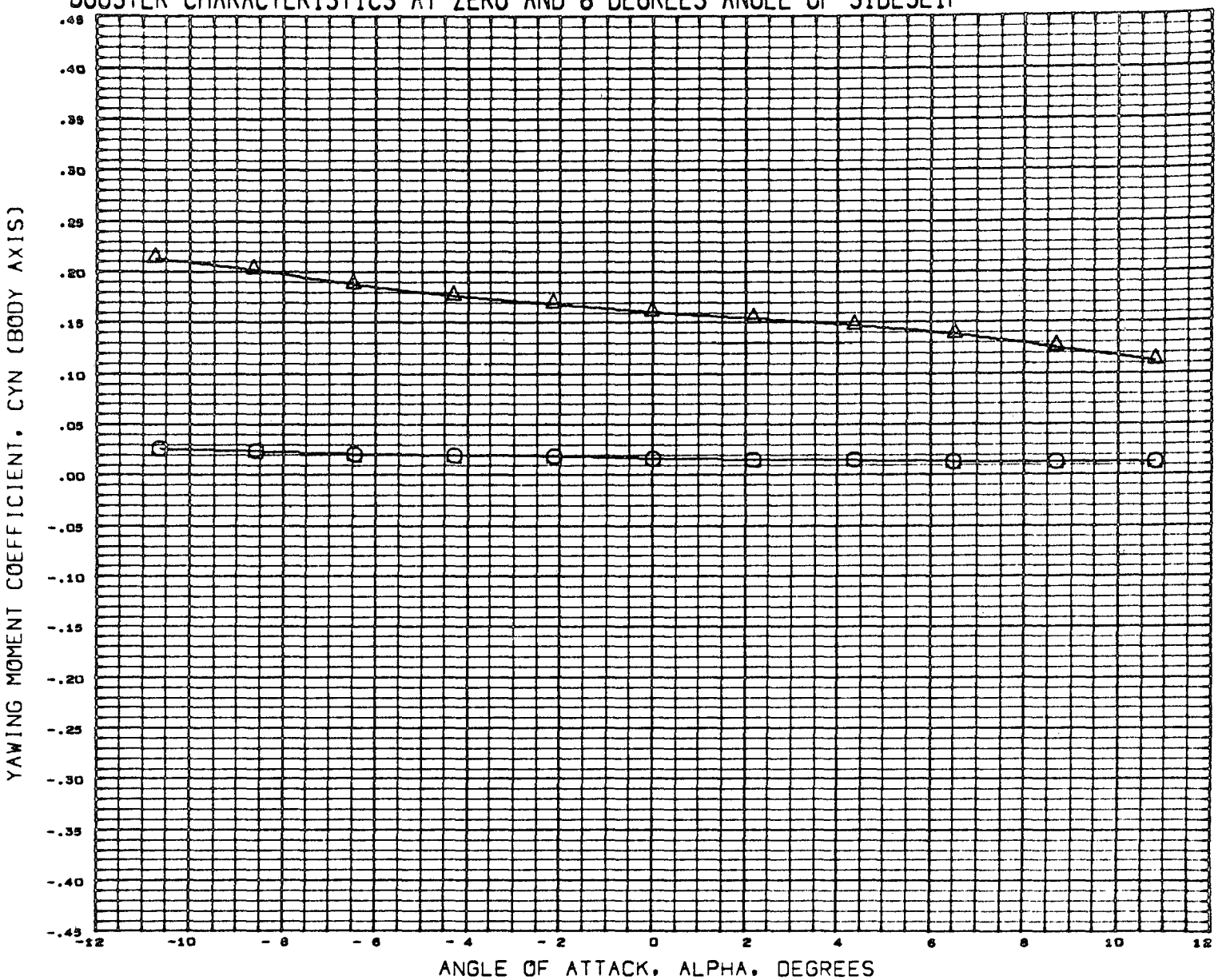


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.197

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

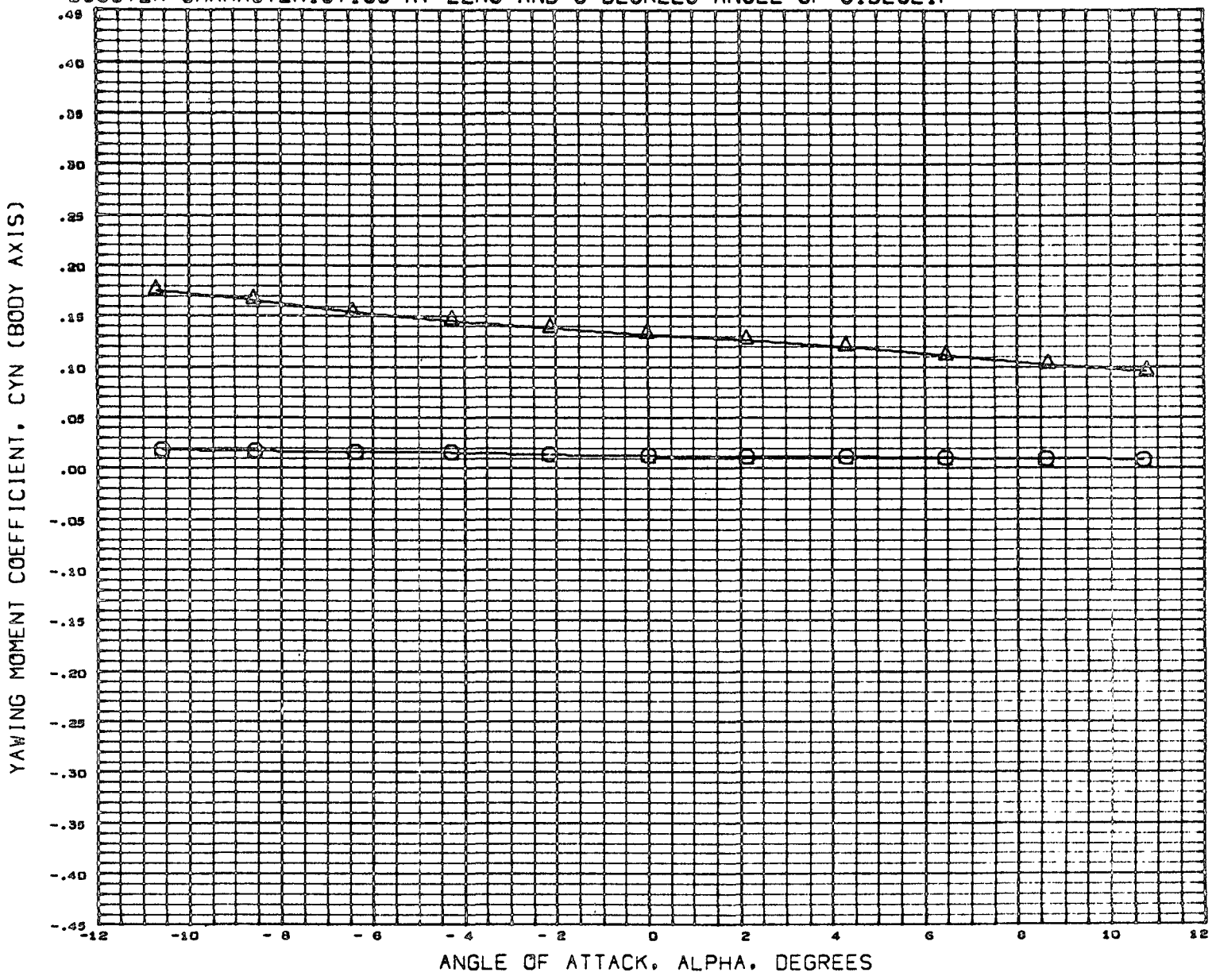


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.466

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

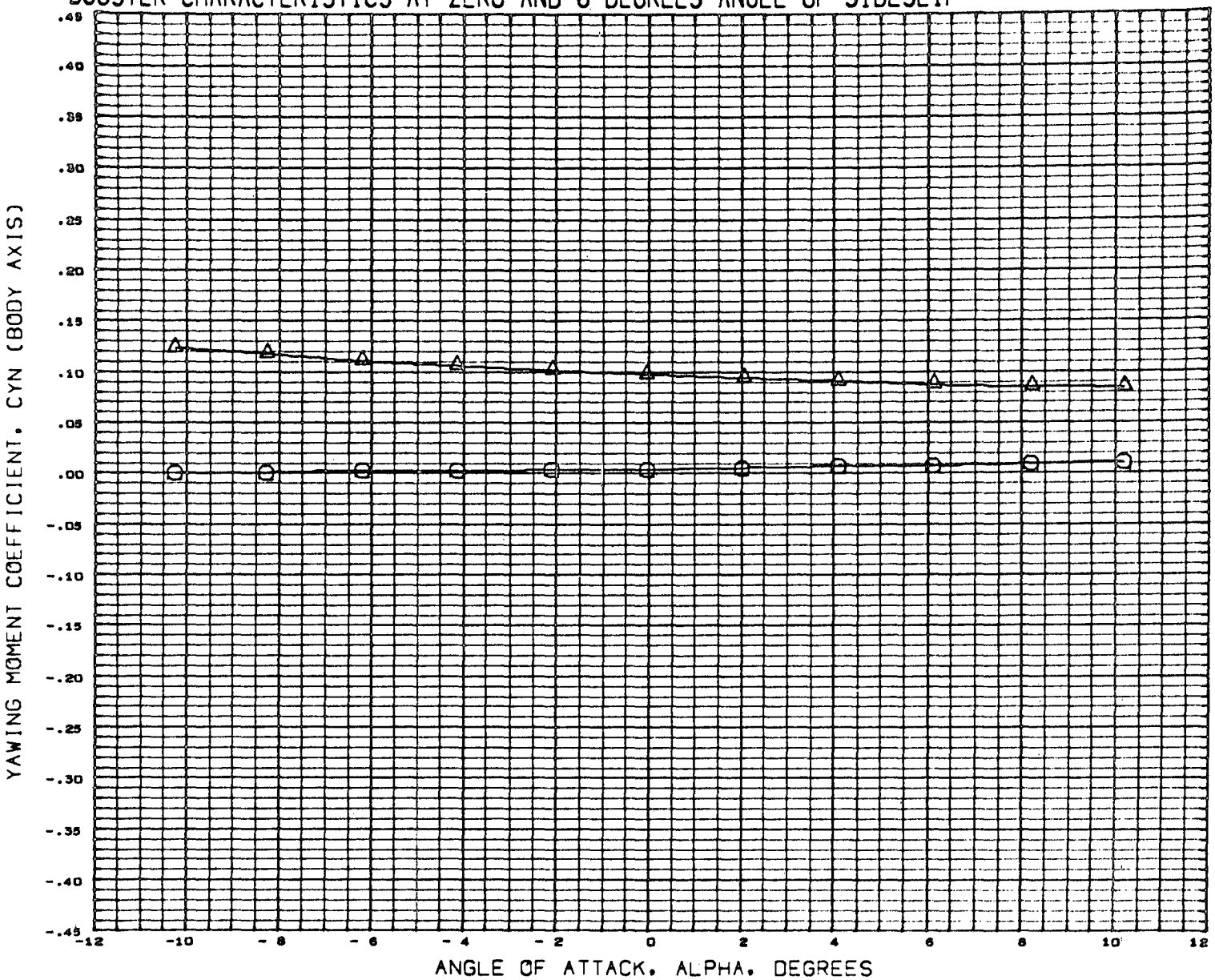


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

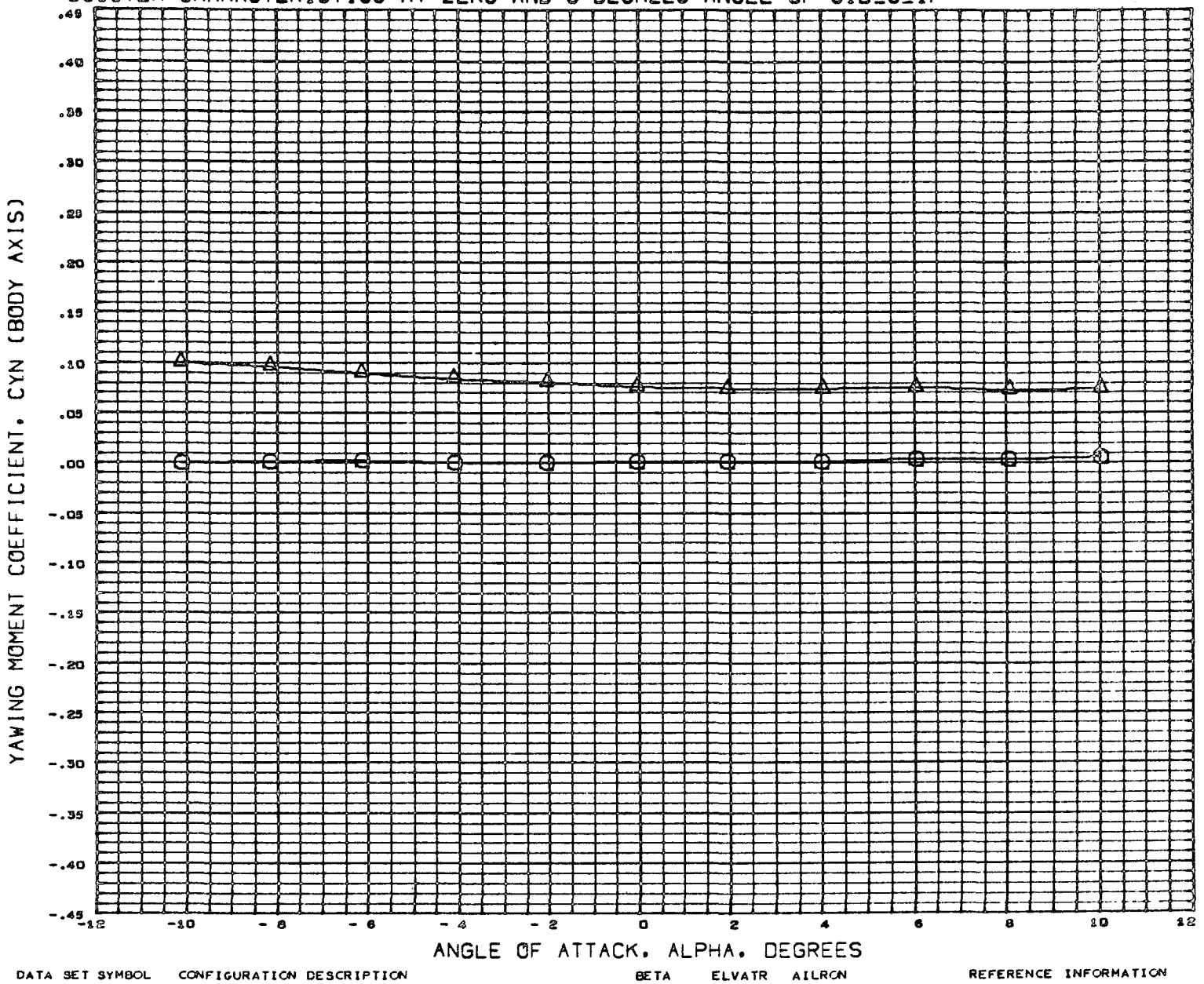


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C48W14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C48W14V8	6.000	0.000	0.000

MACH 2.990

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

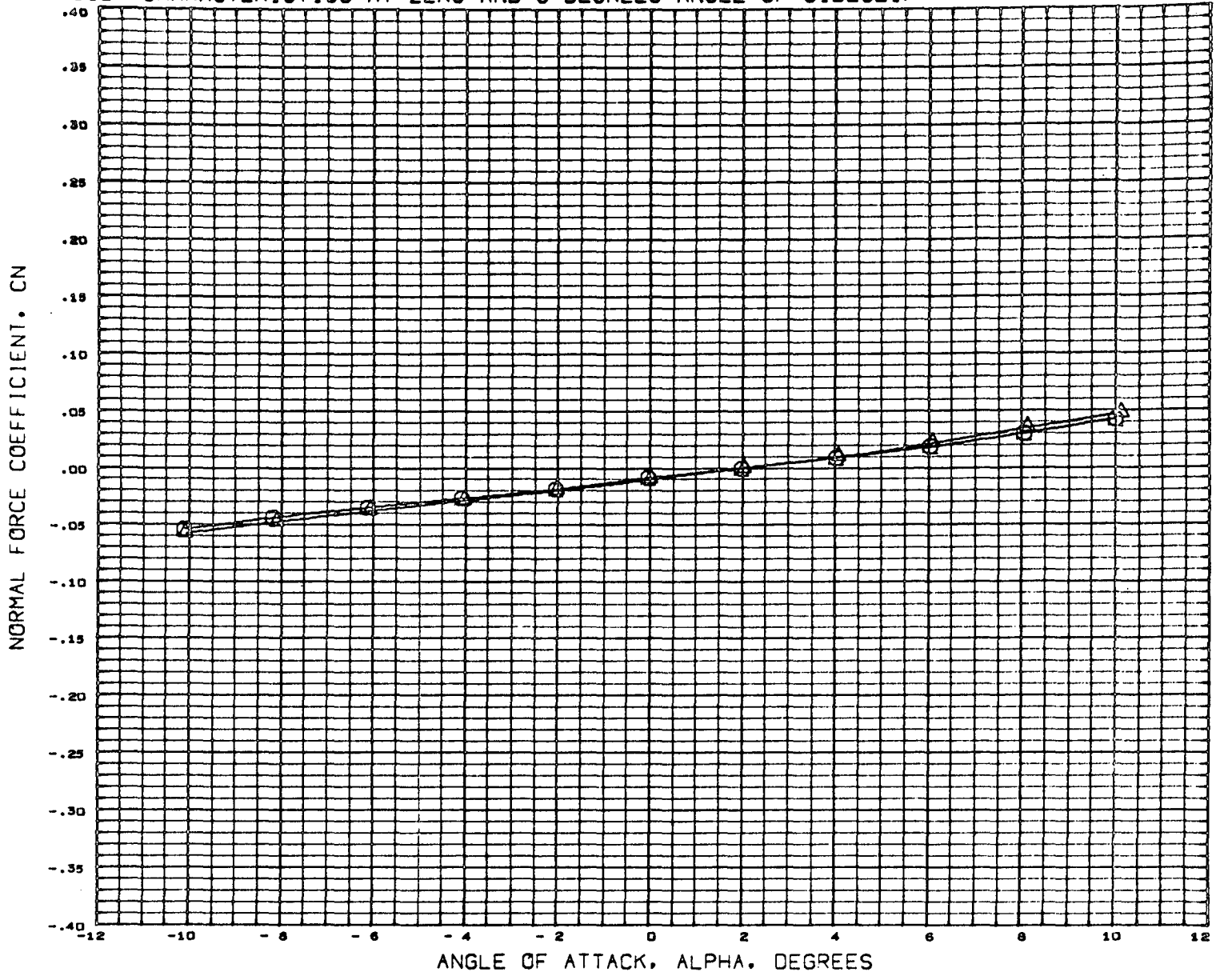


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3205A)	○	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000
(A3207A)	△	MSFC490 GD DELTA BOOSTER B20C4BW14V8	6.000	0.000	0.000

MACH 4.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



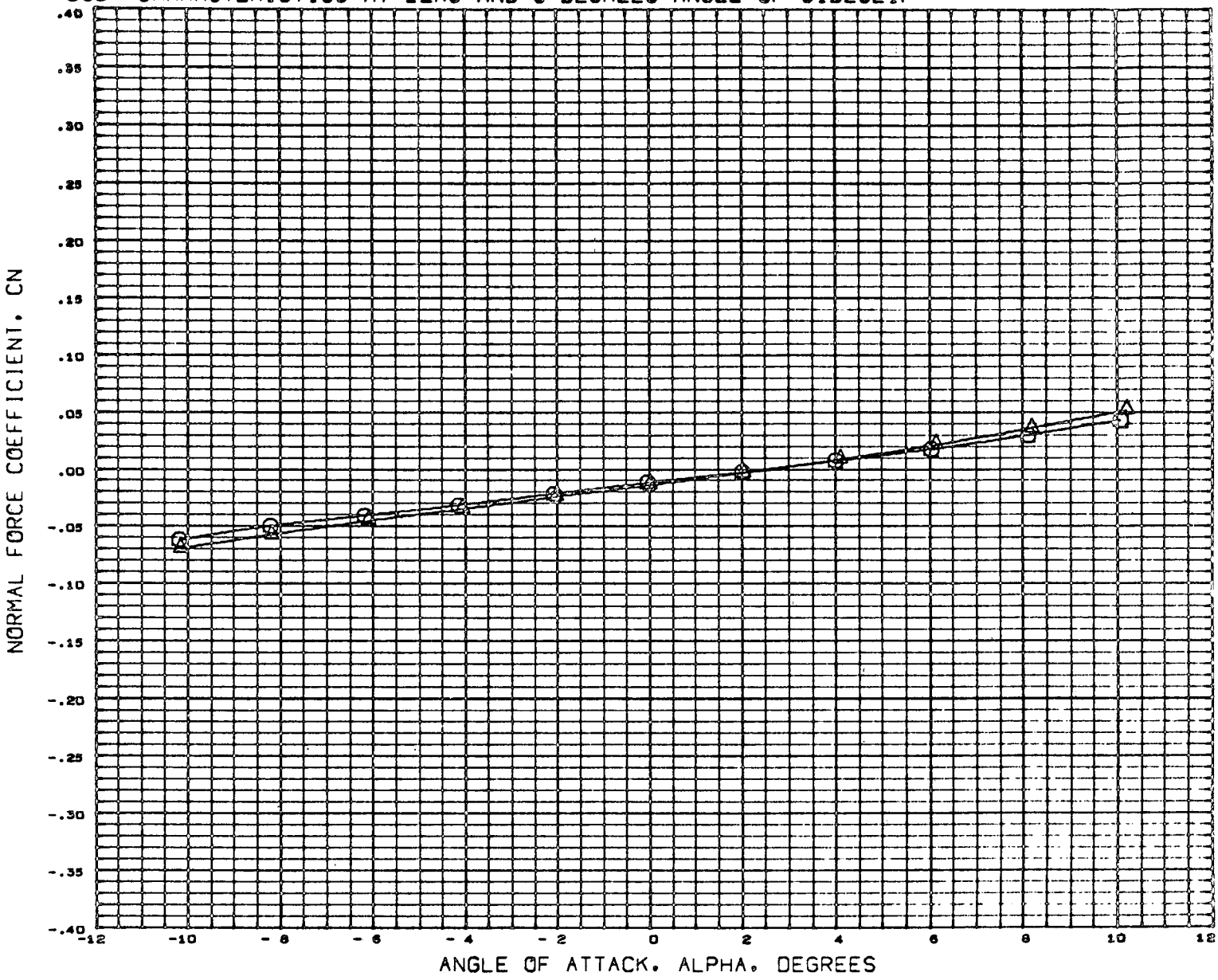
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B2G	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B2G	6.000		

MACH 0.600

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



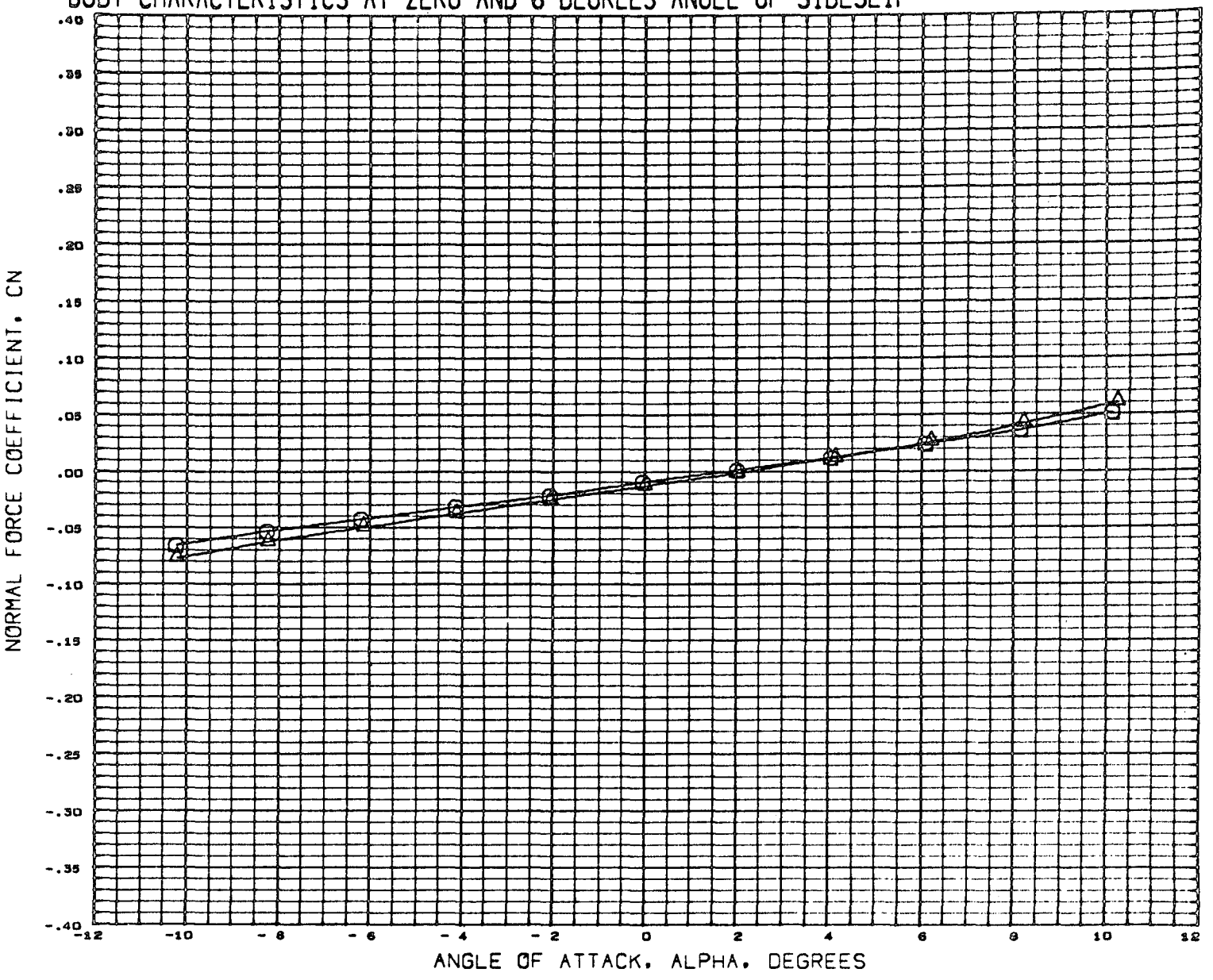
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.896

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



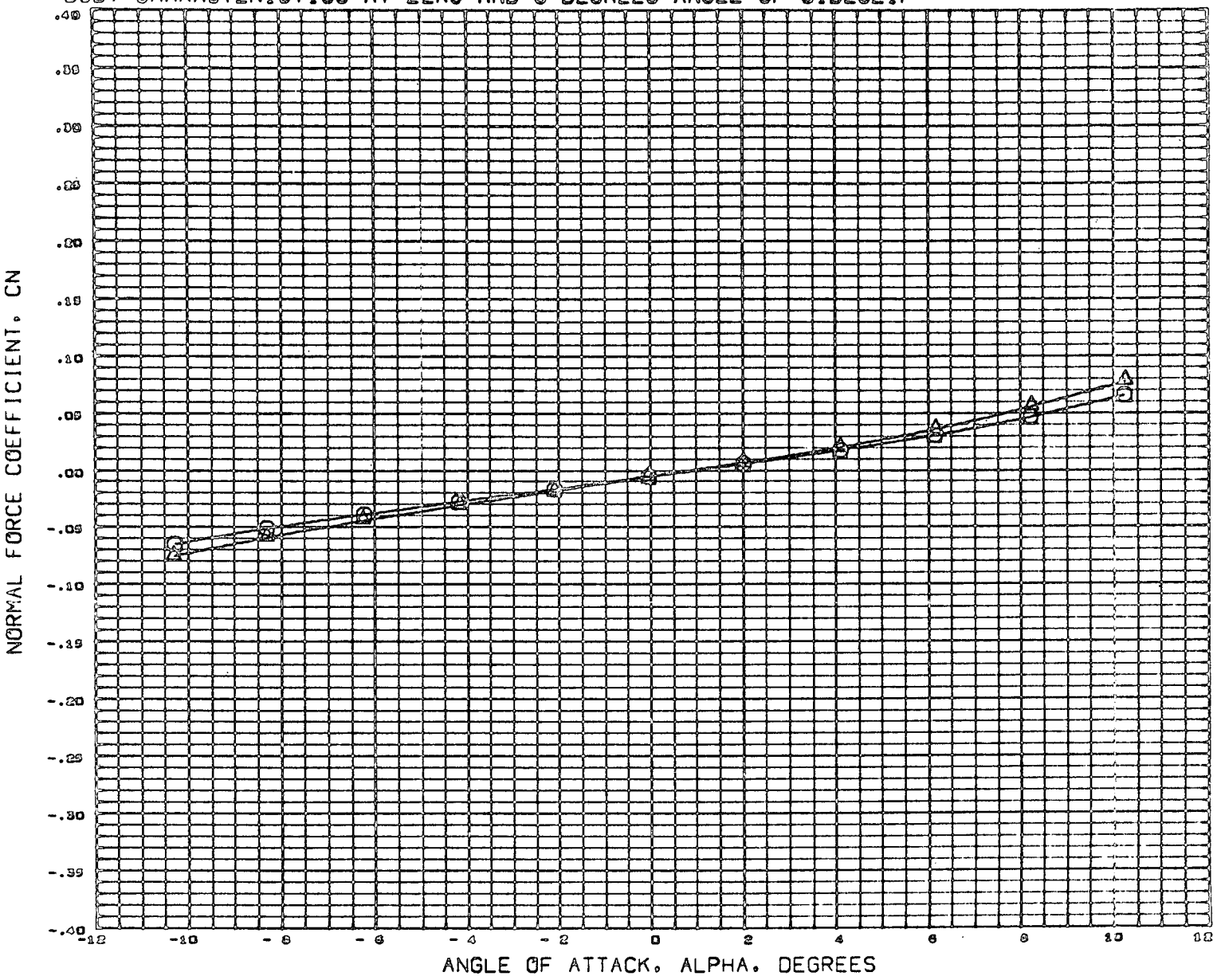
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.098

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



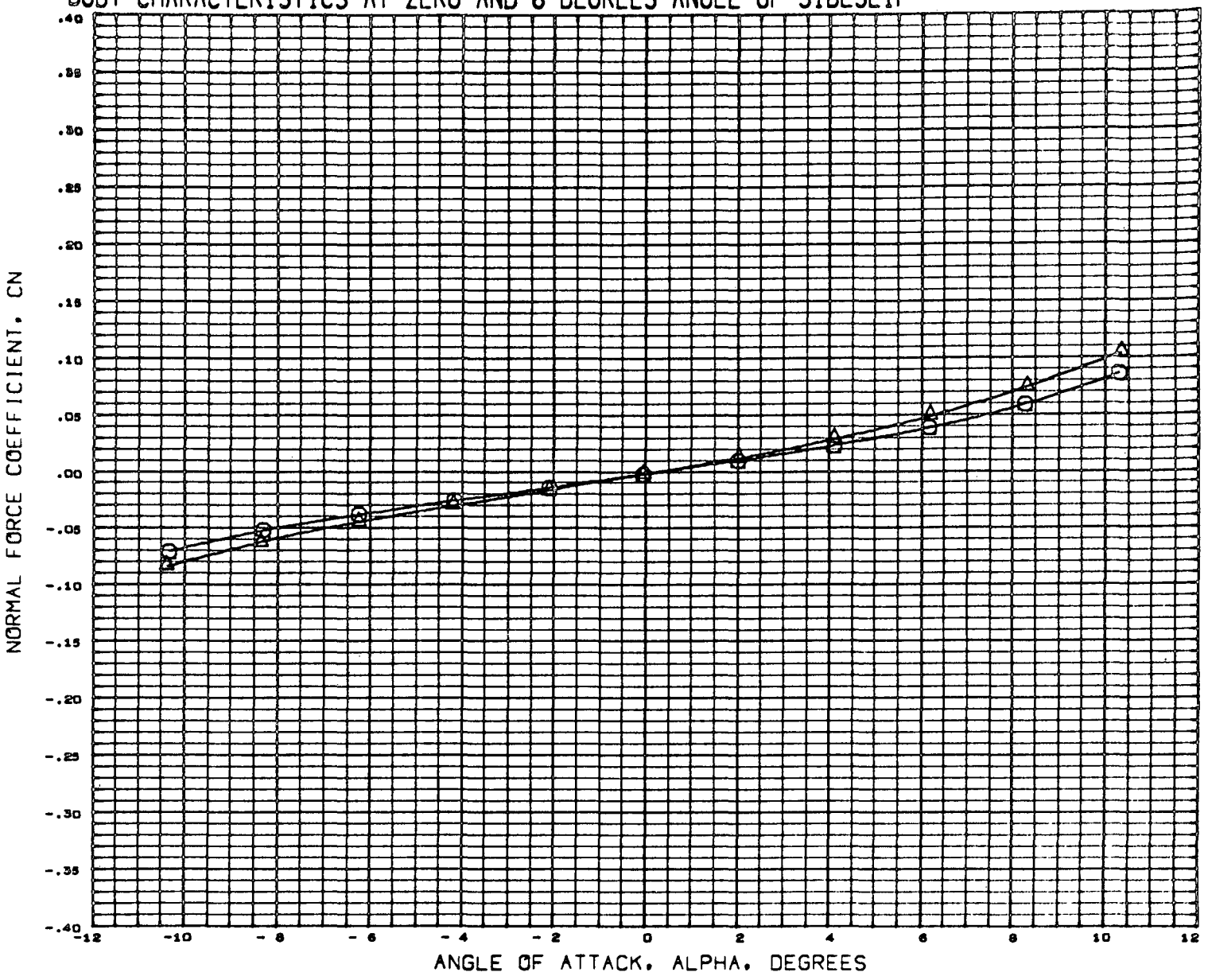
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3256A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.473

REFERENCE INFORMATION

SREF	15.6960	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

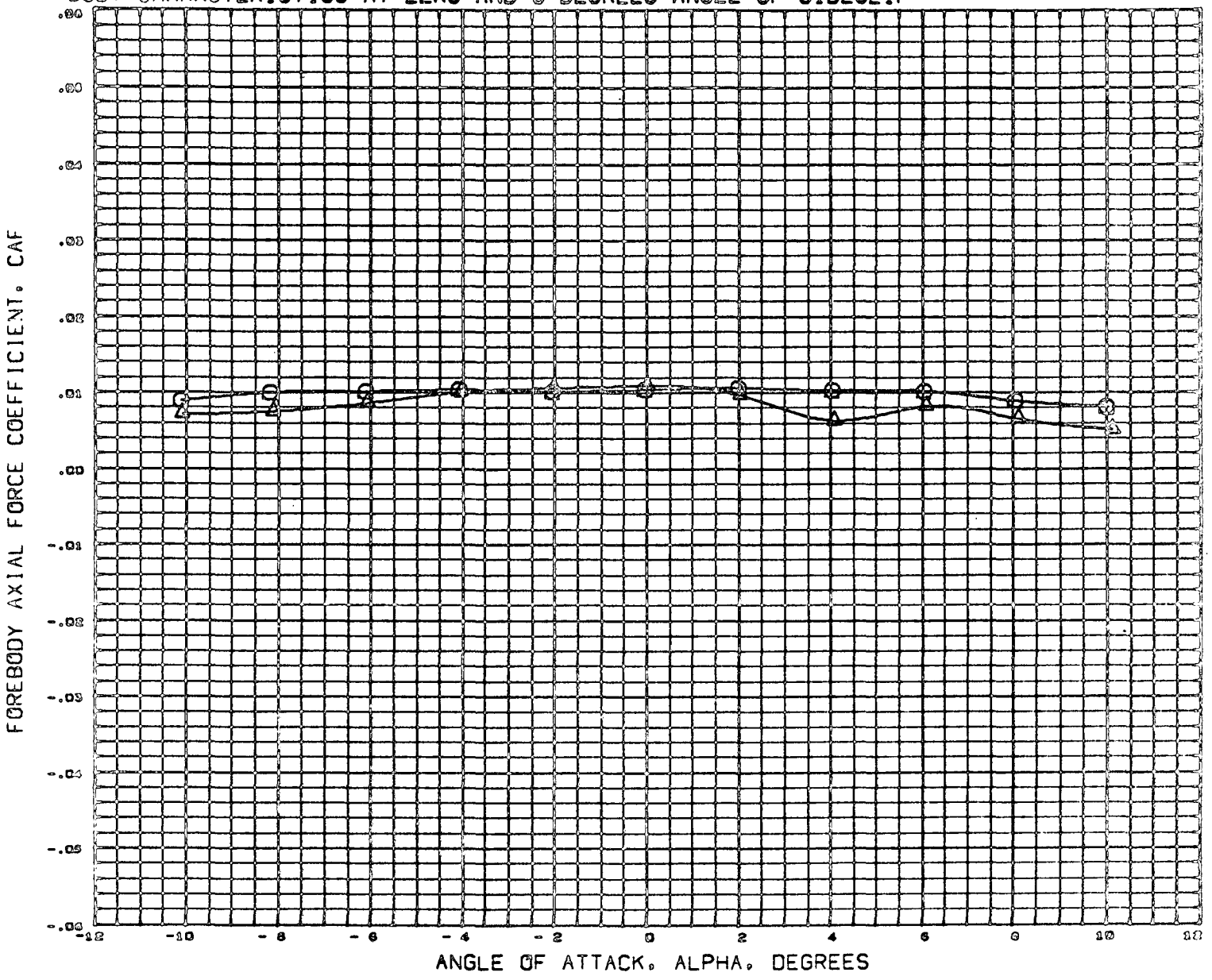


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

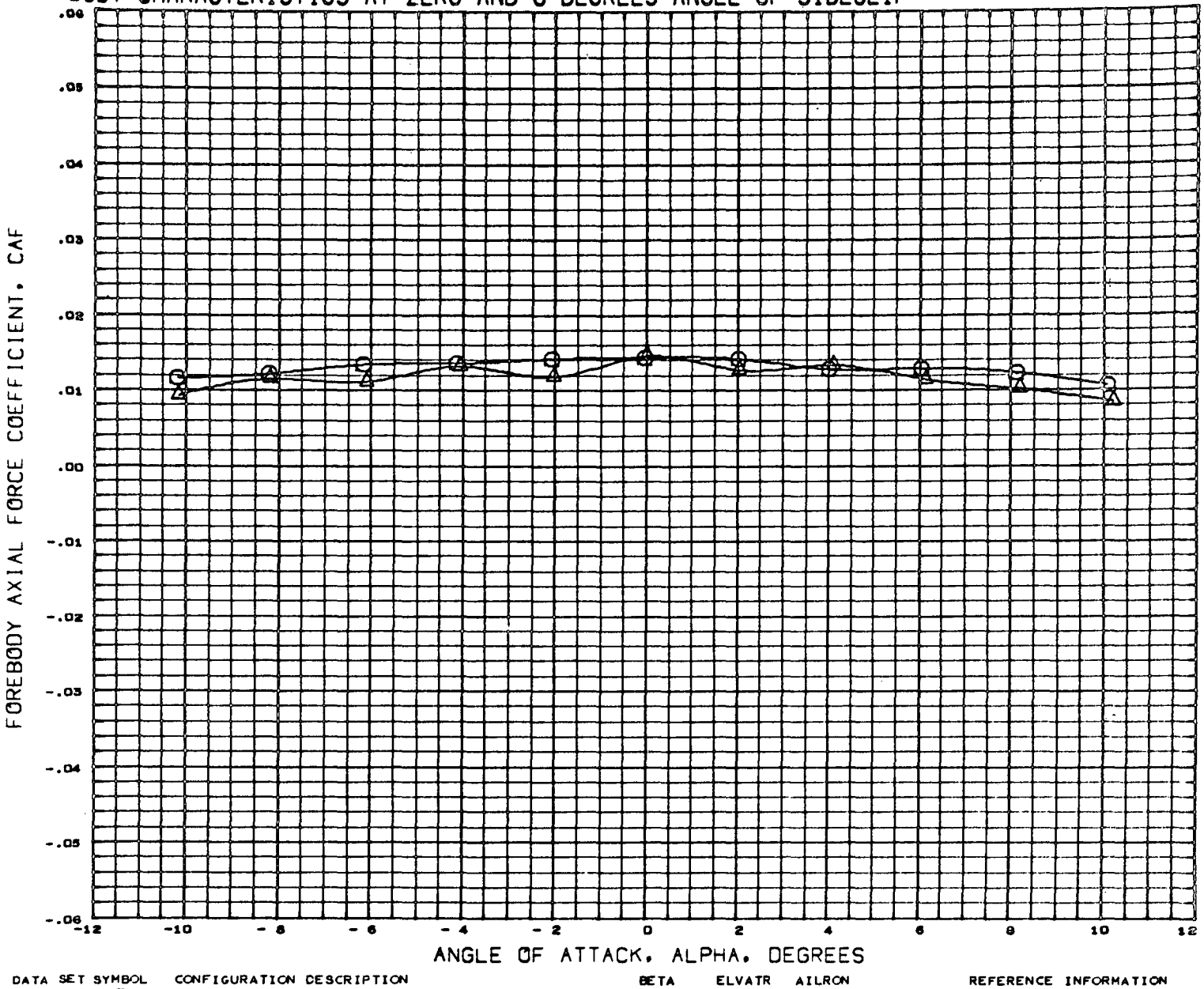


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)	○	MSFC490 GD DELTA BOOSTER 820	0.000		
(M3250A)	△	MSFC490 GD DELTA BOOSTER 820	6.000		

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



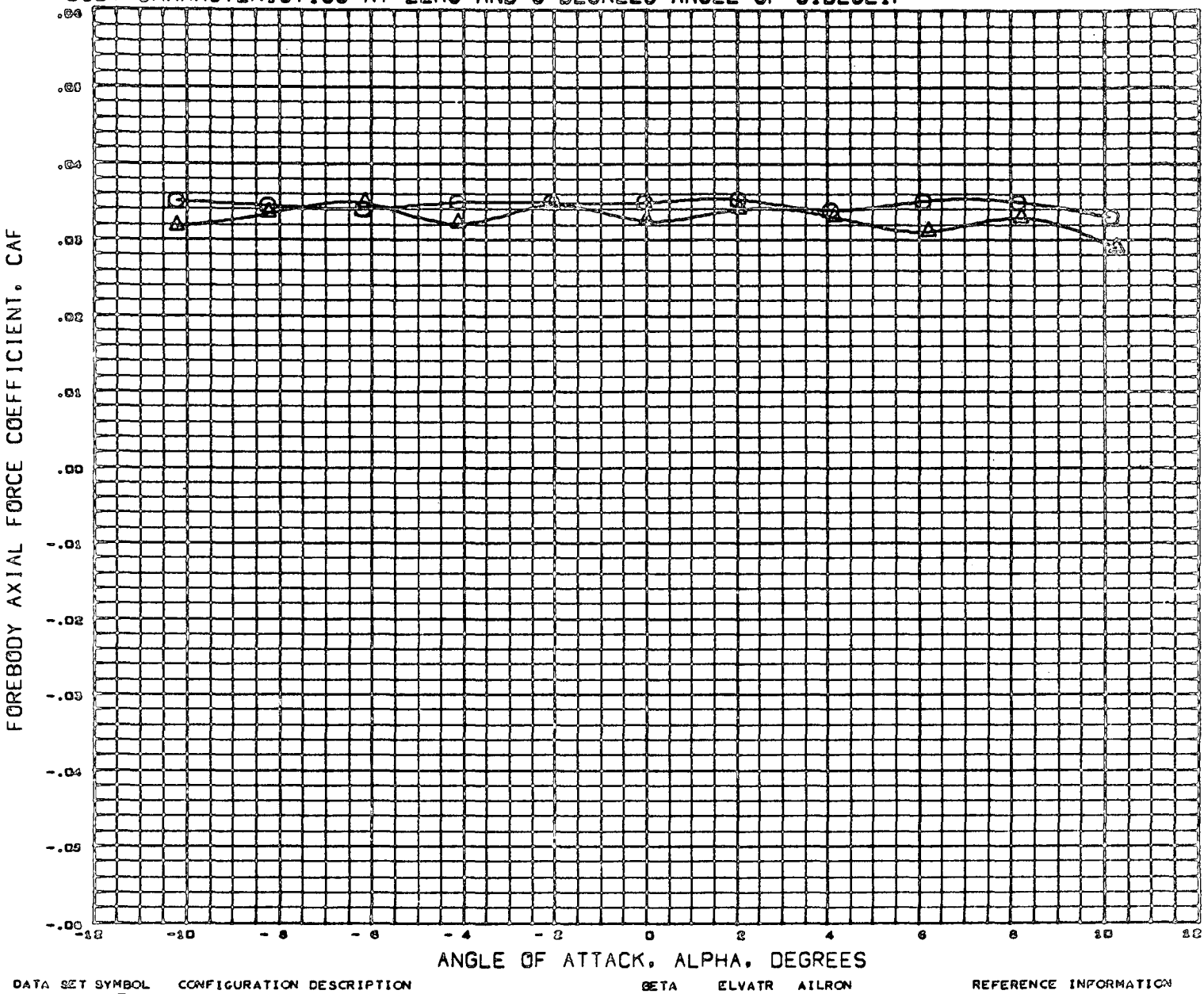
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.896

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



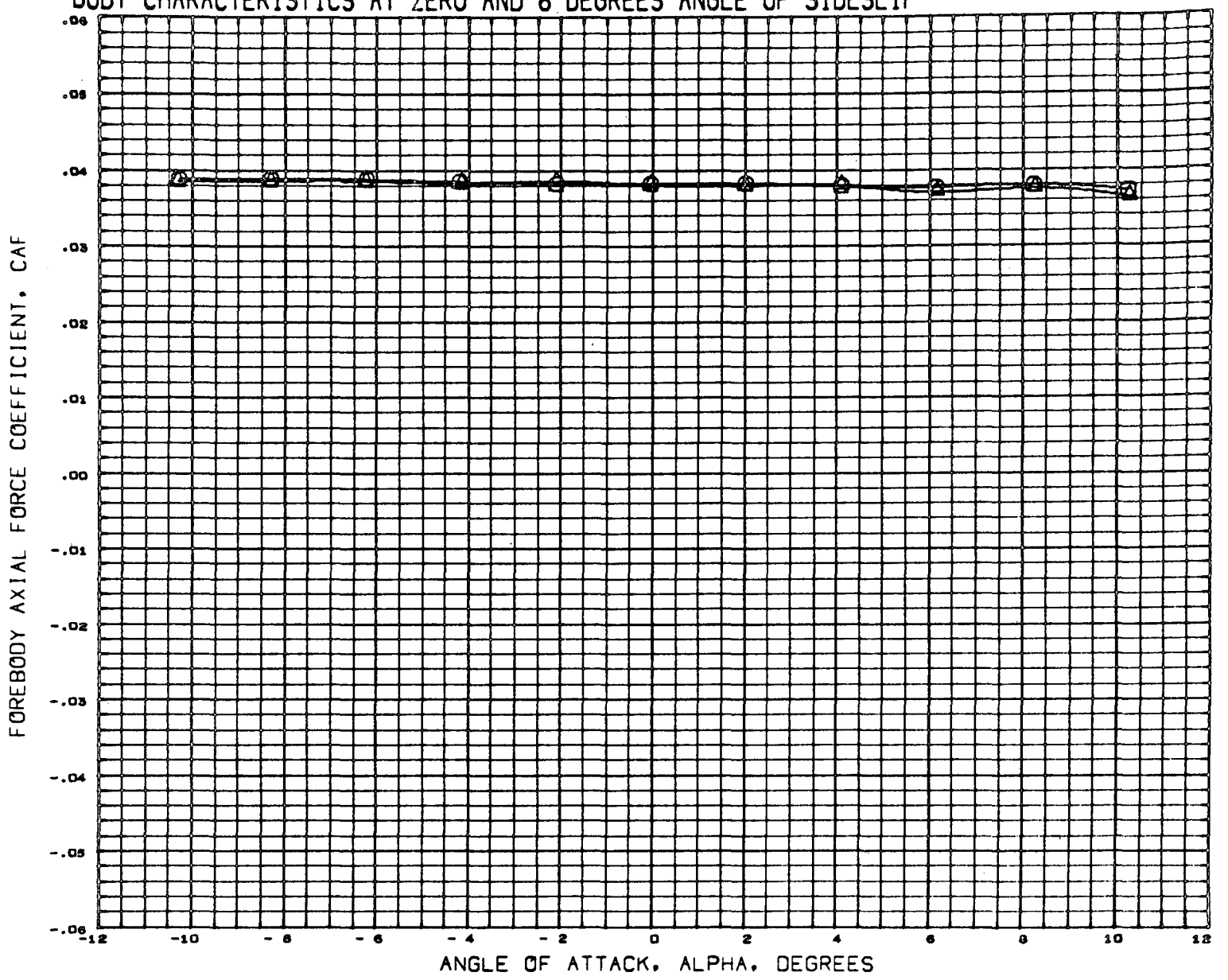
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)	○	MSFC490 GD DELTA BOOSTER 82C	0.000		
(M3250A)	△	MSFC490 GD DELTA BOOSTER 82C	6.000		

MACH 1.098

REFERENCE INFORMATION

SREF	15.6500	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

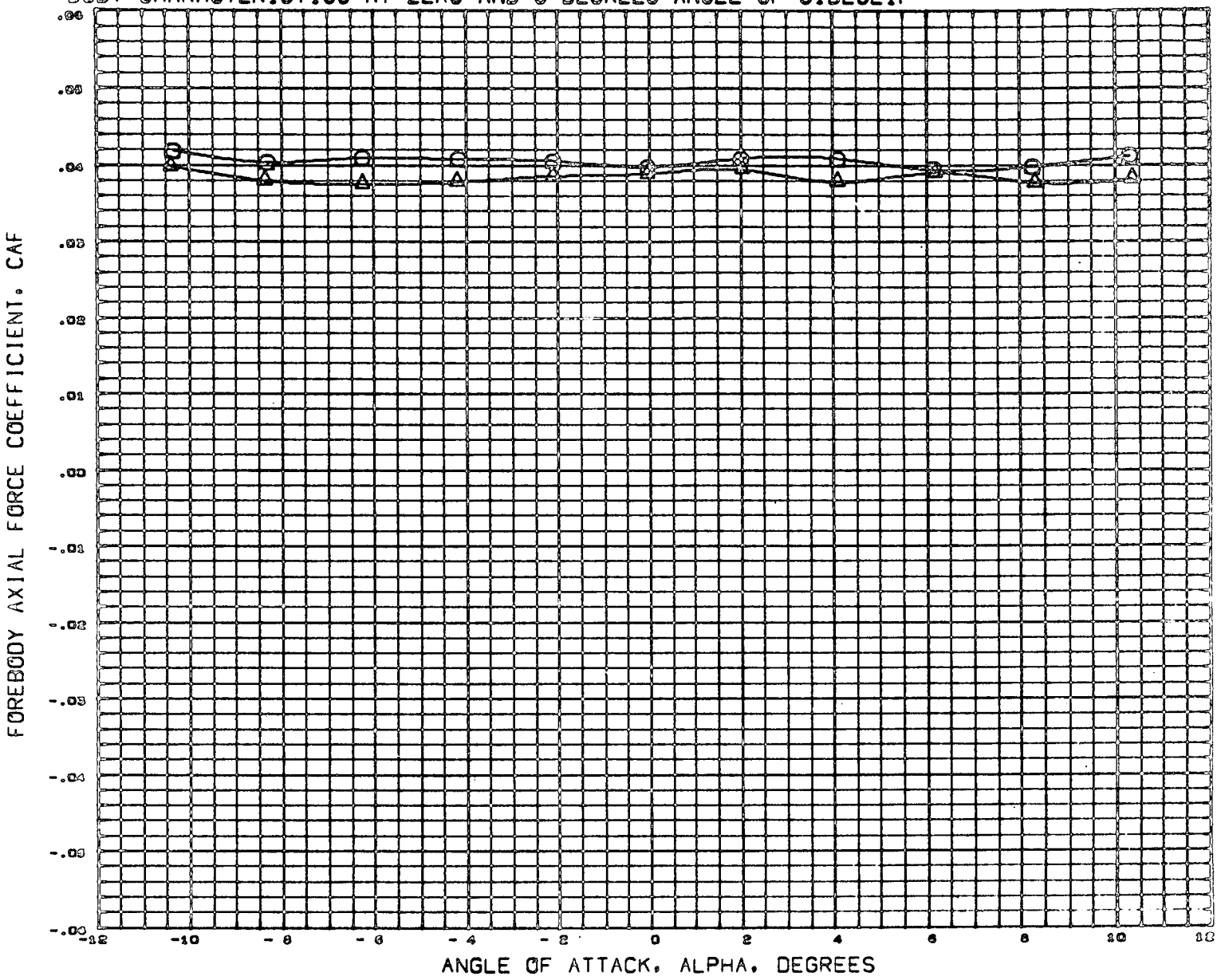


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.473

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



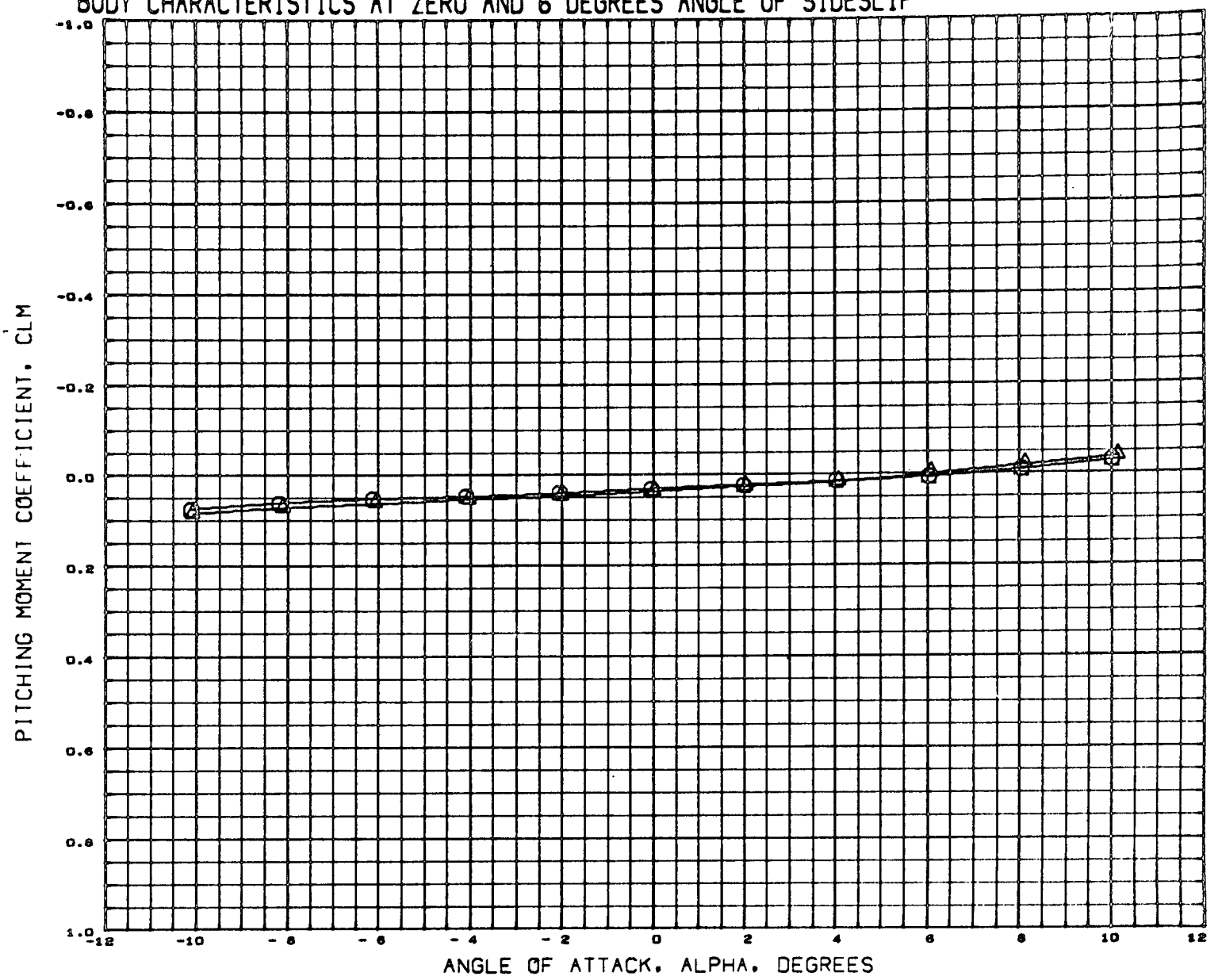
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.959

REFERENCE INFORMATION

SREF	15.8560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



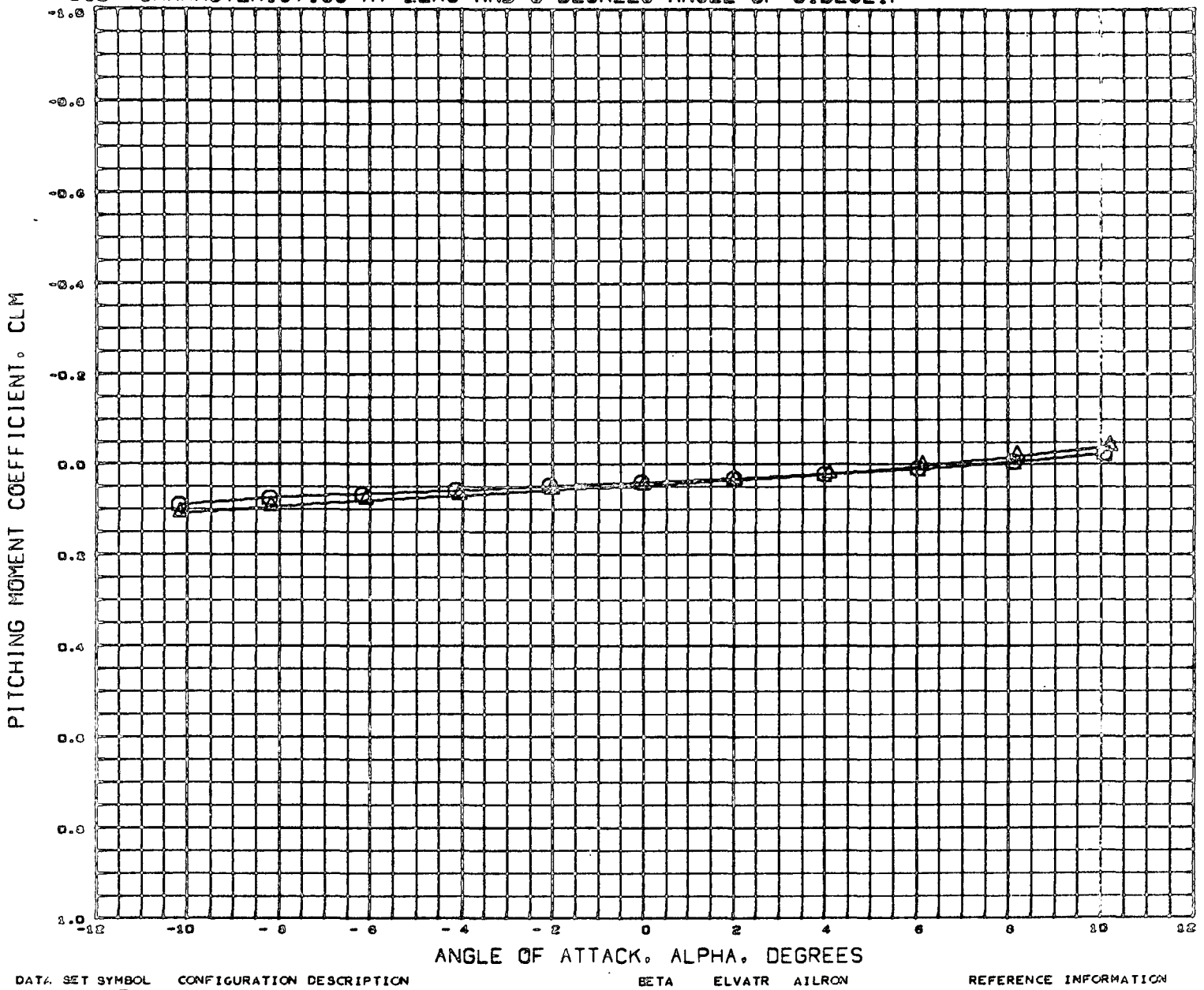
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.600

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



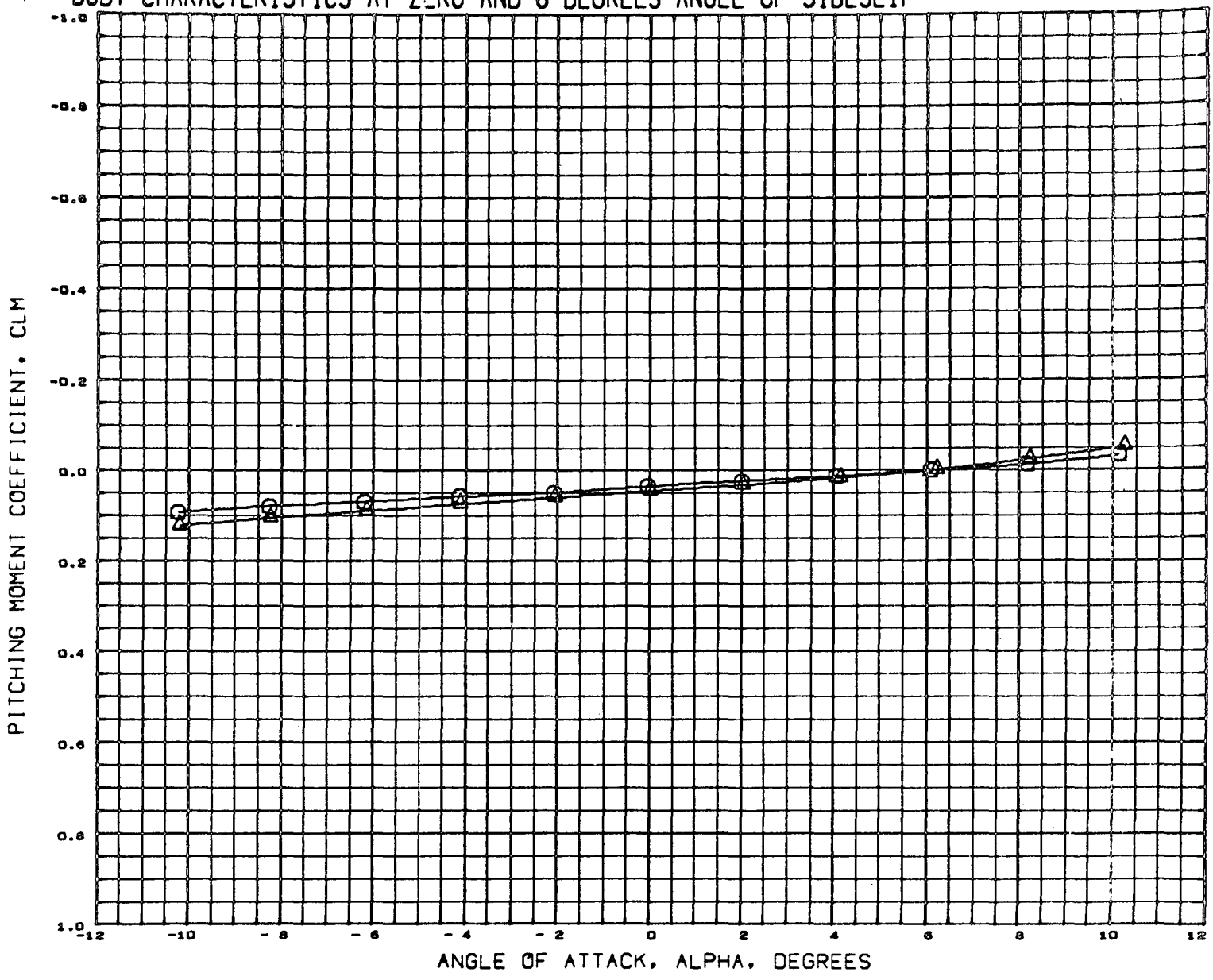
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B2D	0.000		
(M3258A)		MSFC490 GD DELTA BOOSTER B2D	6.000		

MACH 0.896

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	9.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0095	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

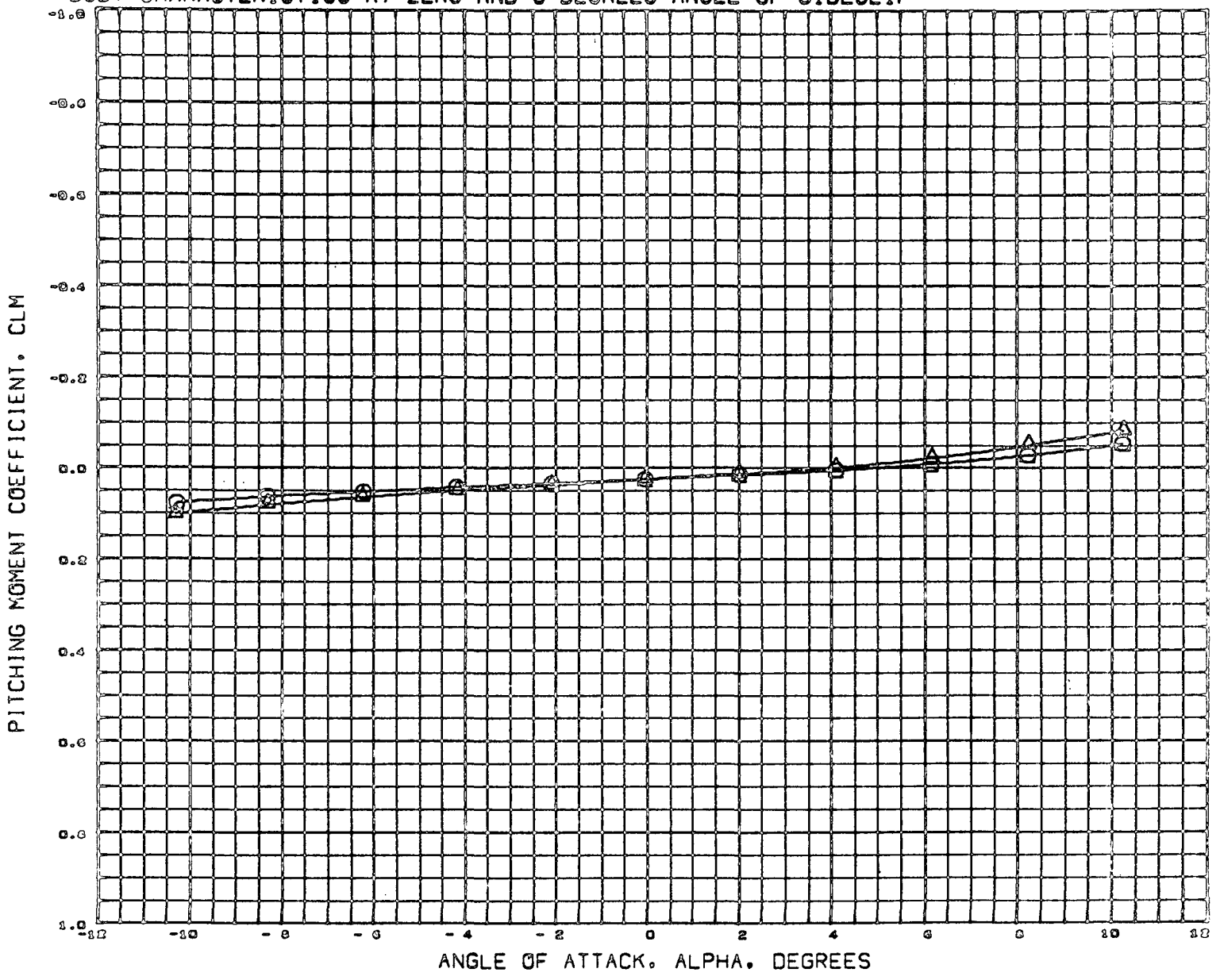


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H32D1A)	○	MSFC490 GD DELTA BOOSTER B2G	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B2G	6.000		

MACH 1.098

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



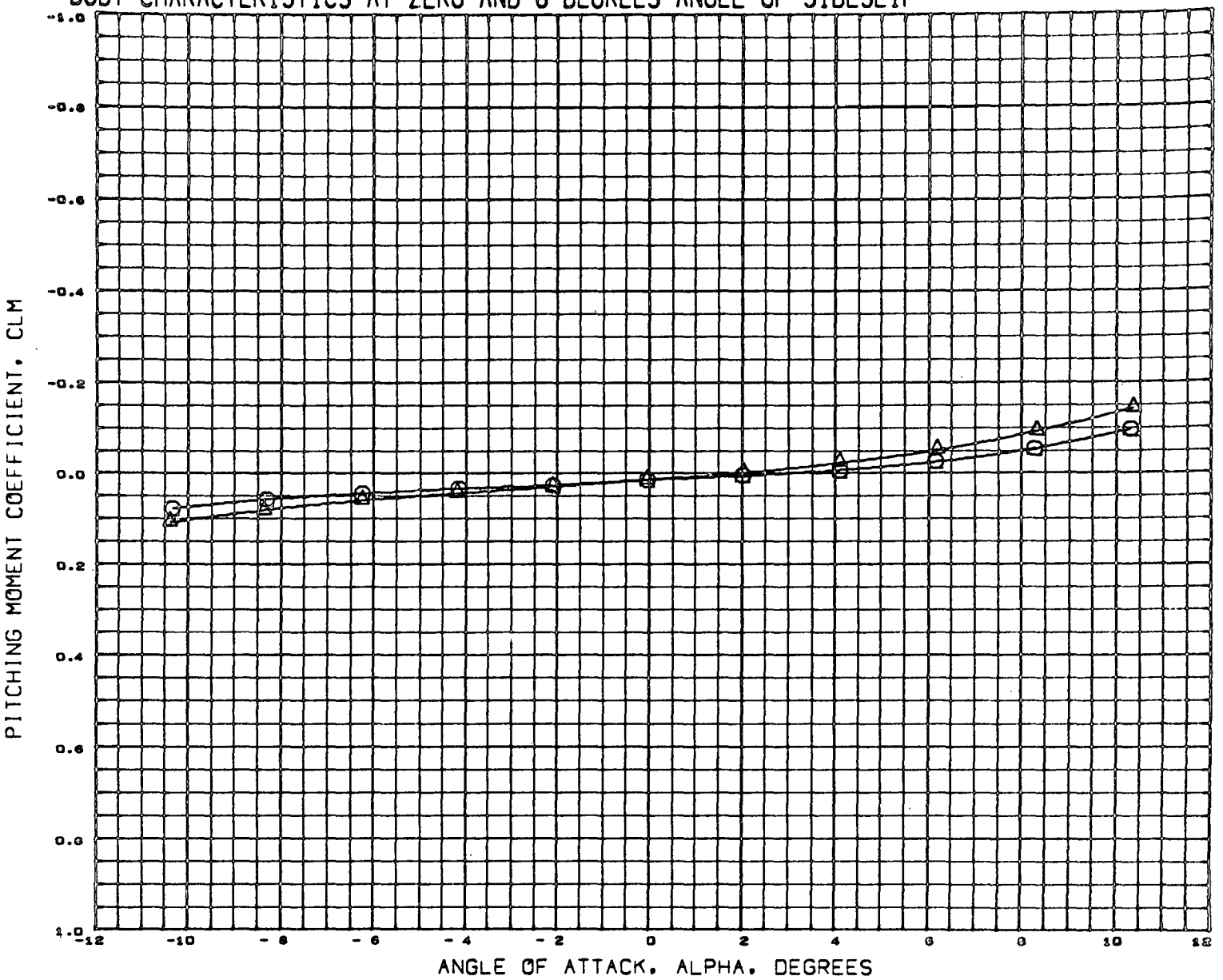
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B2J	0.000		
(M3250A)		MSFC490 GD DELTA BOOSTER B2J	6.000		

MACH 1.473

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	5.0990	INCHES
BREF	9.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

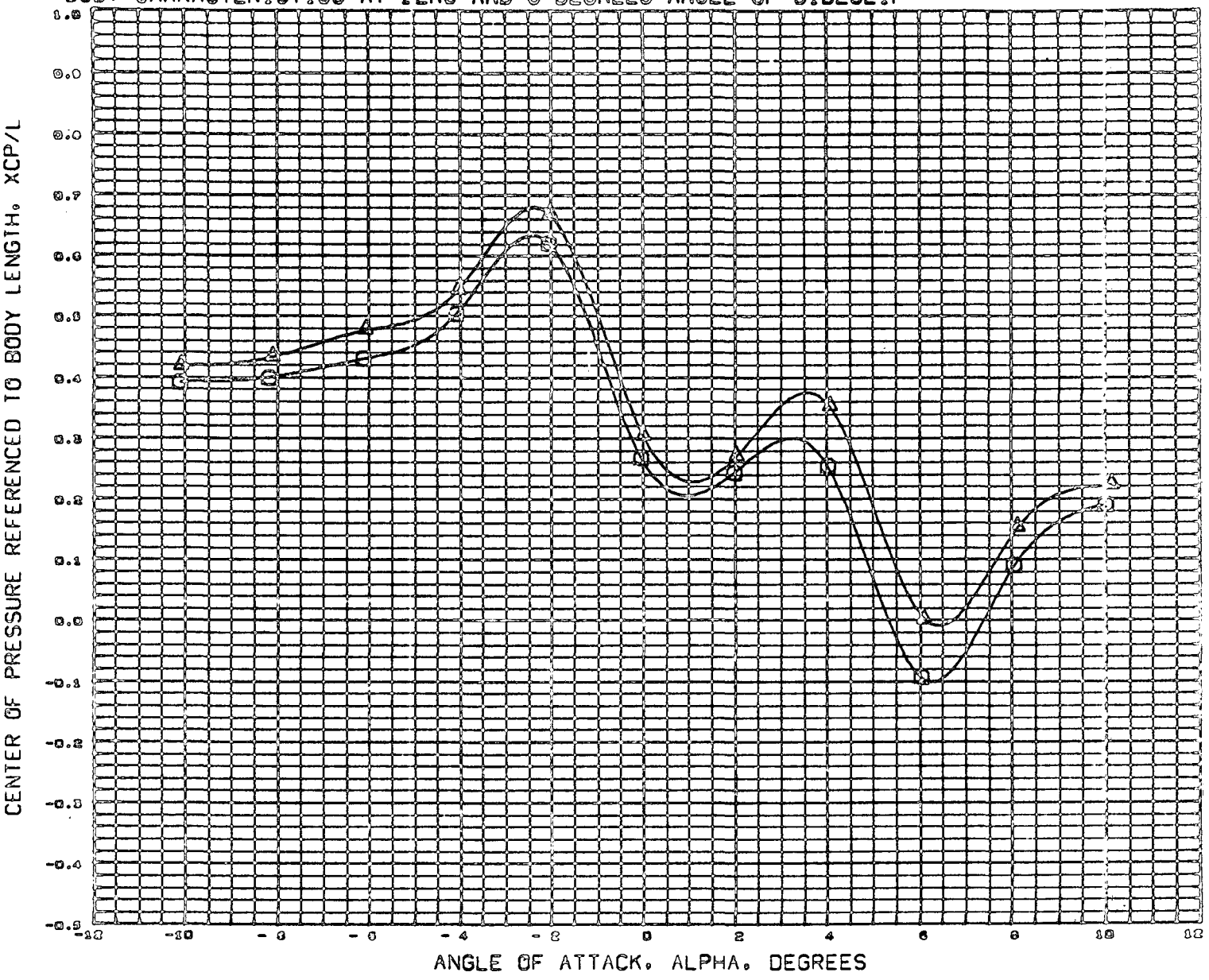


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



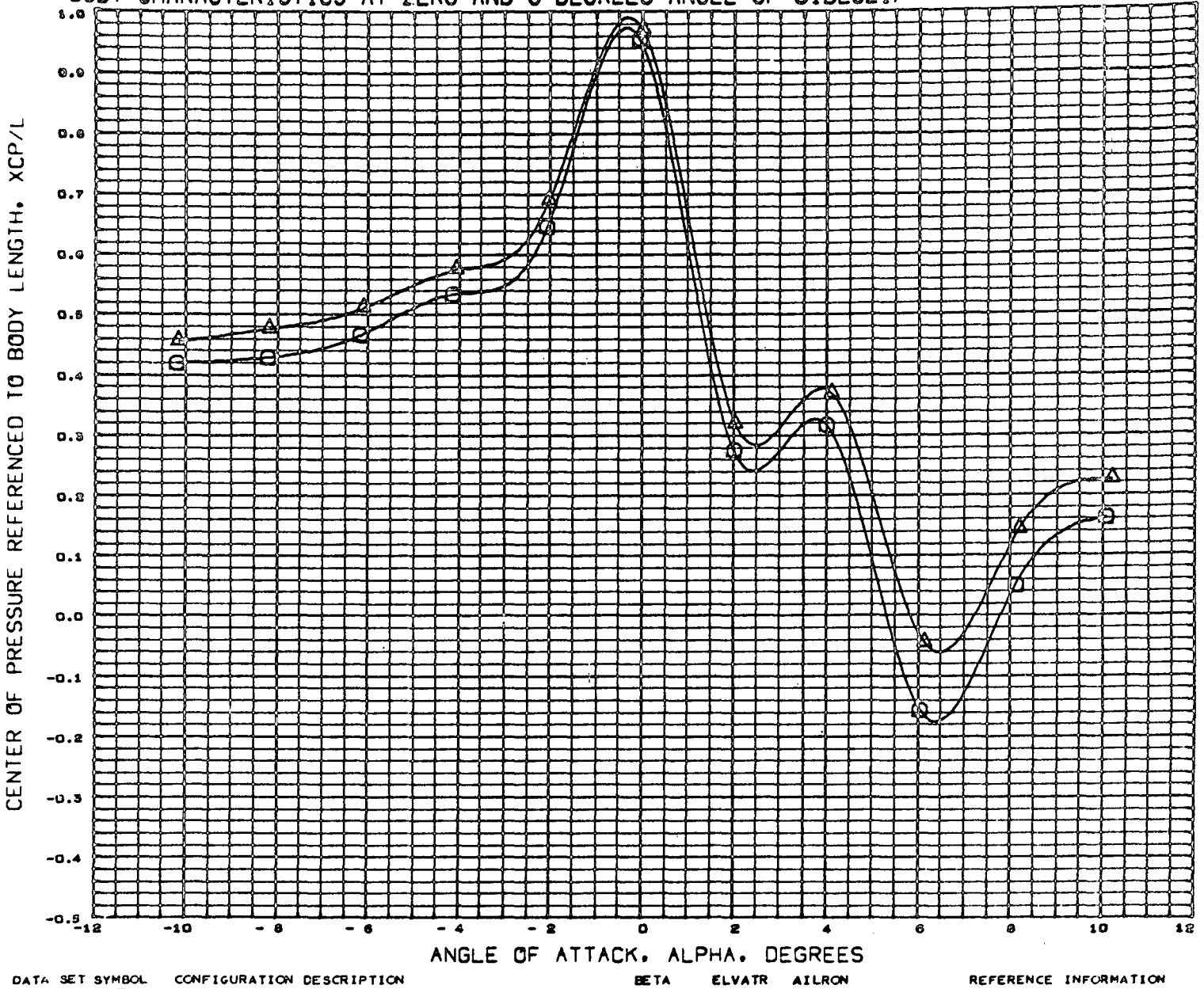
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ETA	ELVATR	AILRON
(M3201A)	○	MSFC490 GD DELTA BOOSTER B2J	0.000		
(M3250A)	△	MSFC490 GD DELTA BOOSTER B2J	6.000		

MACH 0.600

REFERENCE INFORMATION

SREF	15.0500	SQ IN
LREF	5.0050	INCHES
BREF	6.0000	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

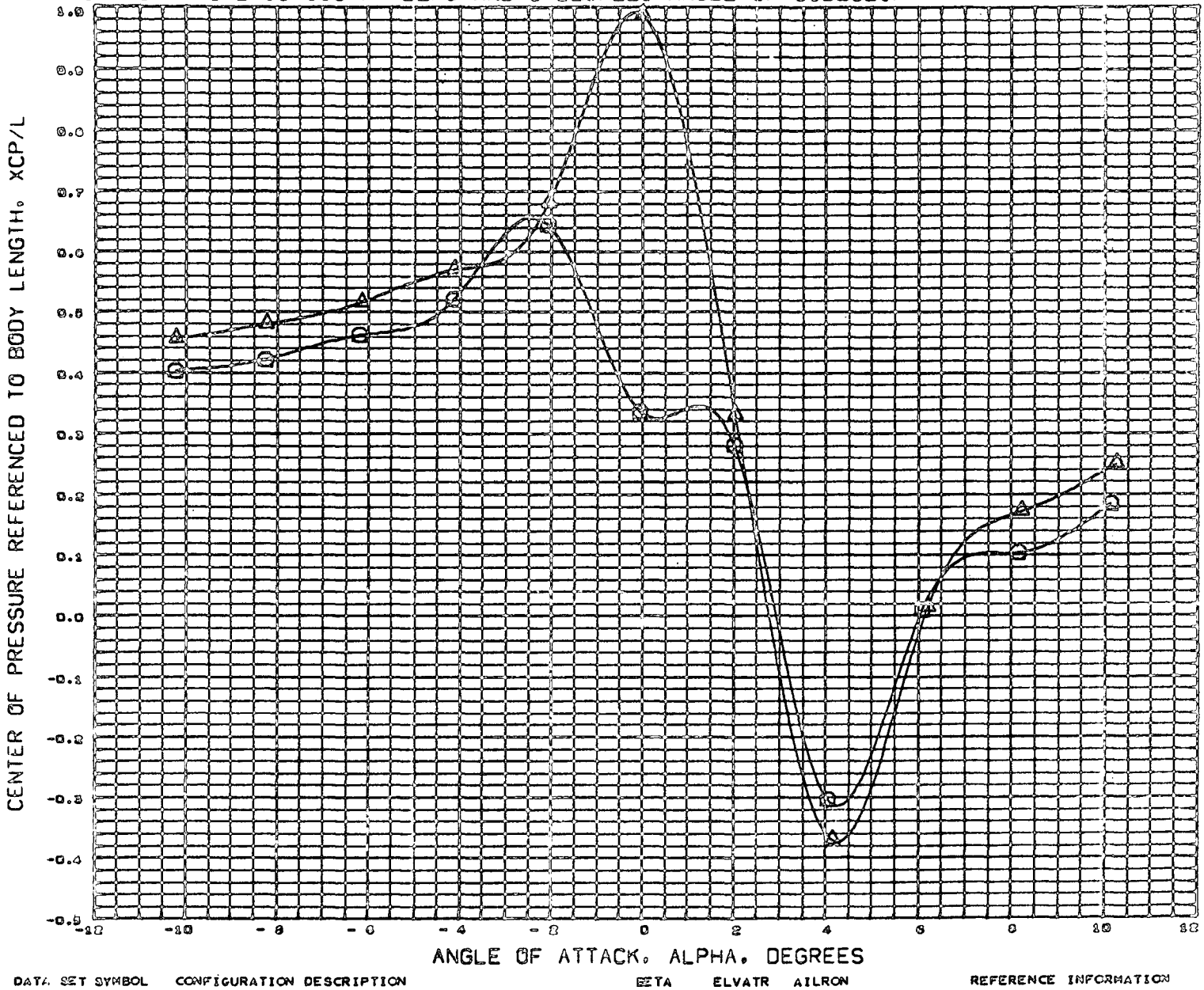


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.896

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



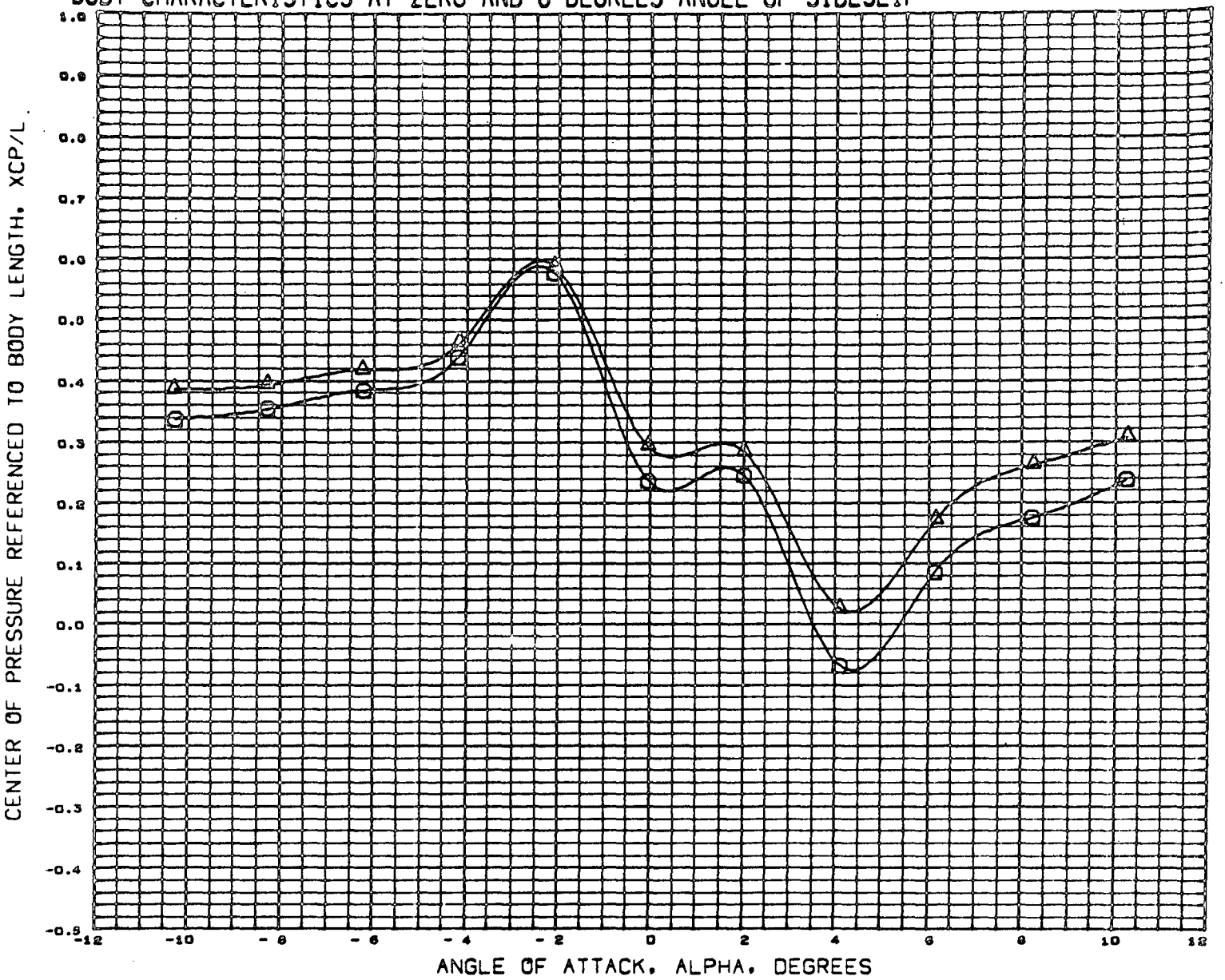
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)	○	MSFC490 GD DELTA BOOSTER B2U	0.000		
(M3258A)	△	MSFC490 GD DELTA BOOSTER B2U	6.000		

MACH 1.098

REFERENCE INFORMATION

SREF	19.6900	SQ IN
LREF	5.0000	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

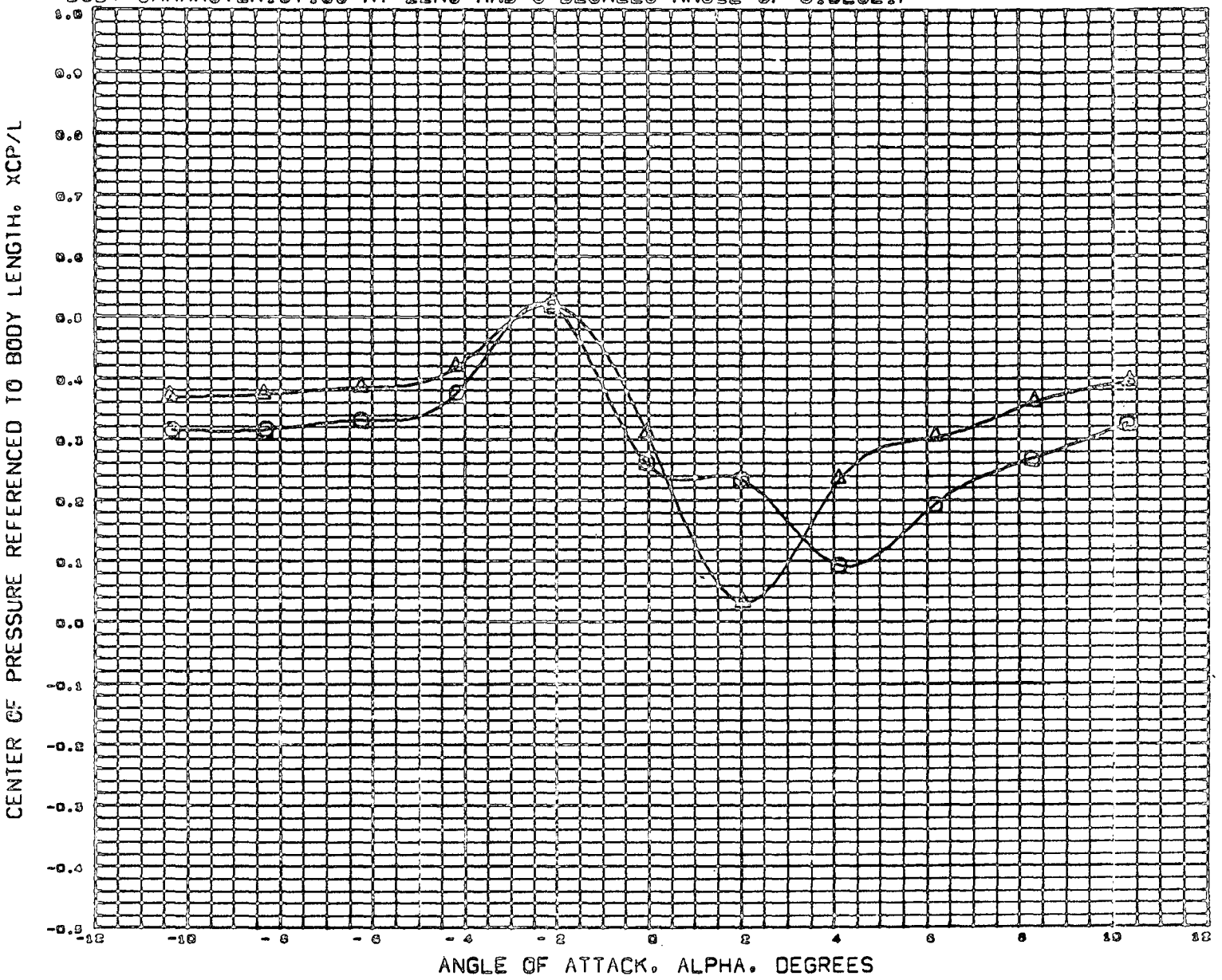


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.473

REFERENCE INFORMATION		
SREF	19.6560	90 IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

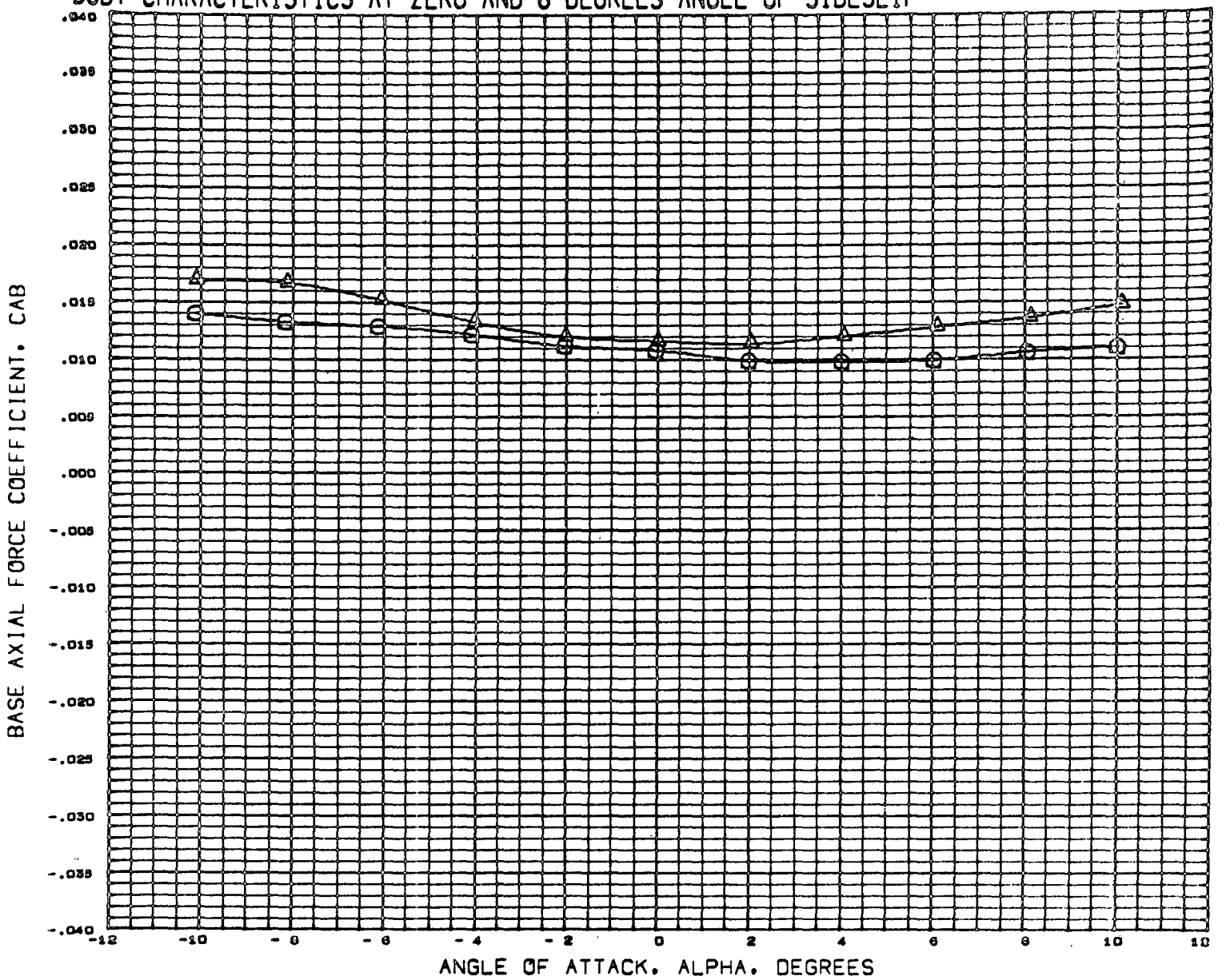


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3231A)		MSFC400 GD DELTA BOOSTER B2C	0.000		
(M3230A)		MSFC400 GD DELTA BOOSTER B2C	0.000		

MACH 1.050

REFERENCE INFORMATION		
SREF	15.6500	SQ IN
LREF	3.0090	INCHES
BREF	6.0000	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0095	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

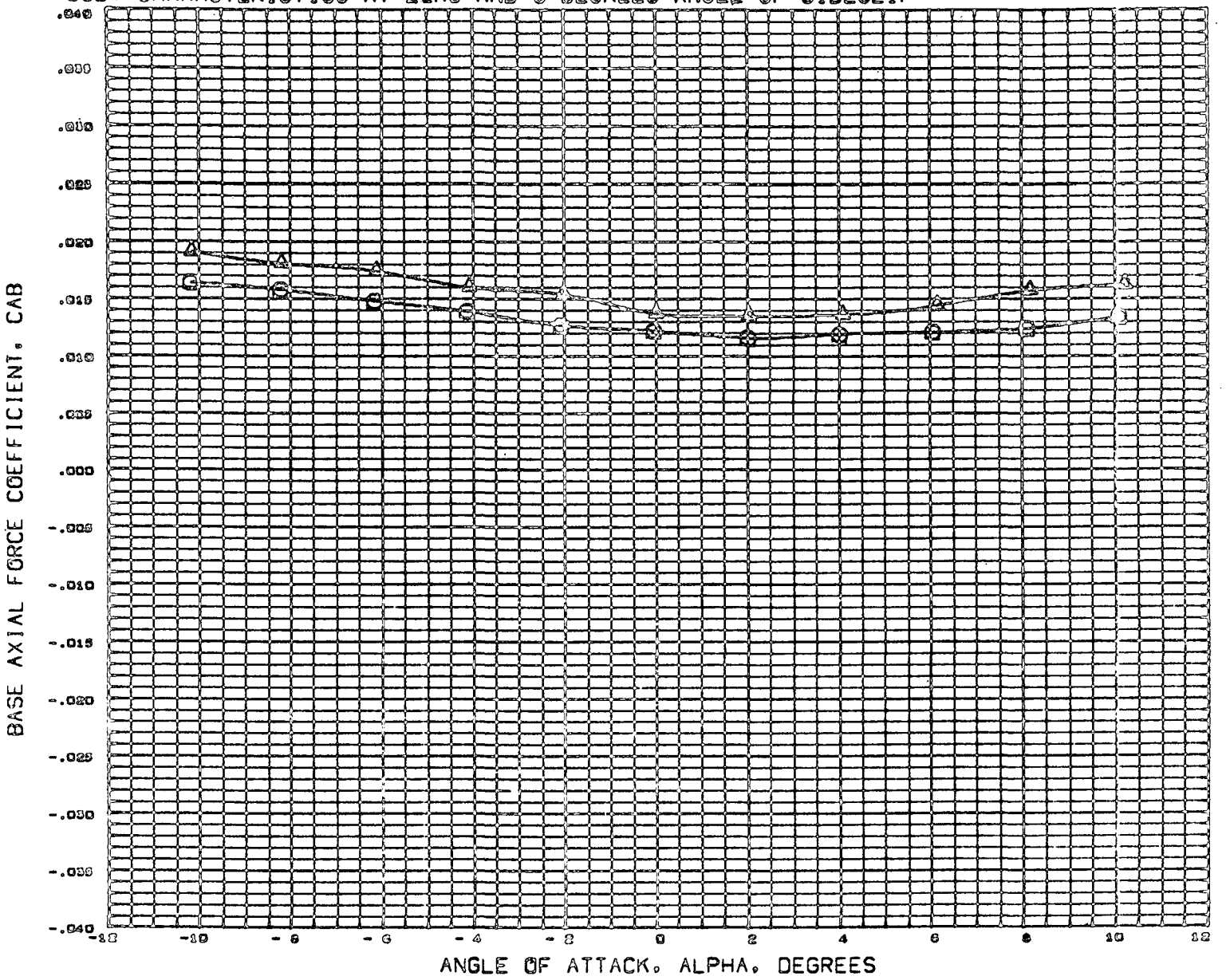


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B2D	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B2D	6.000		

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

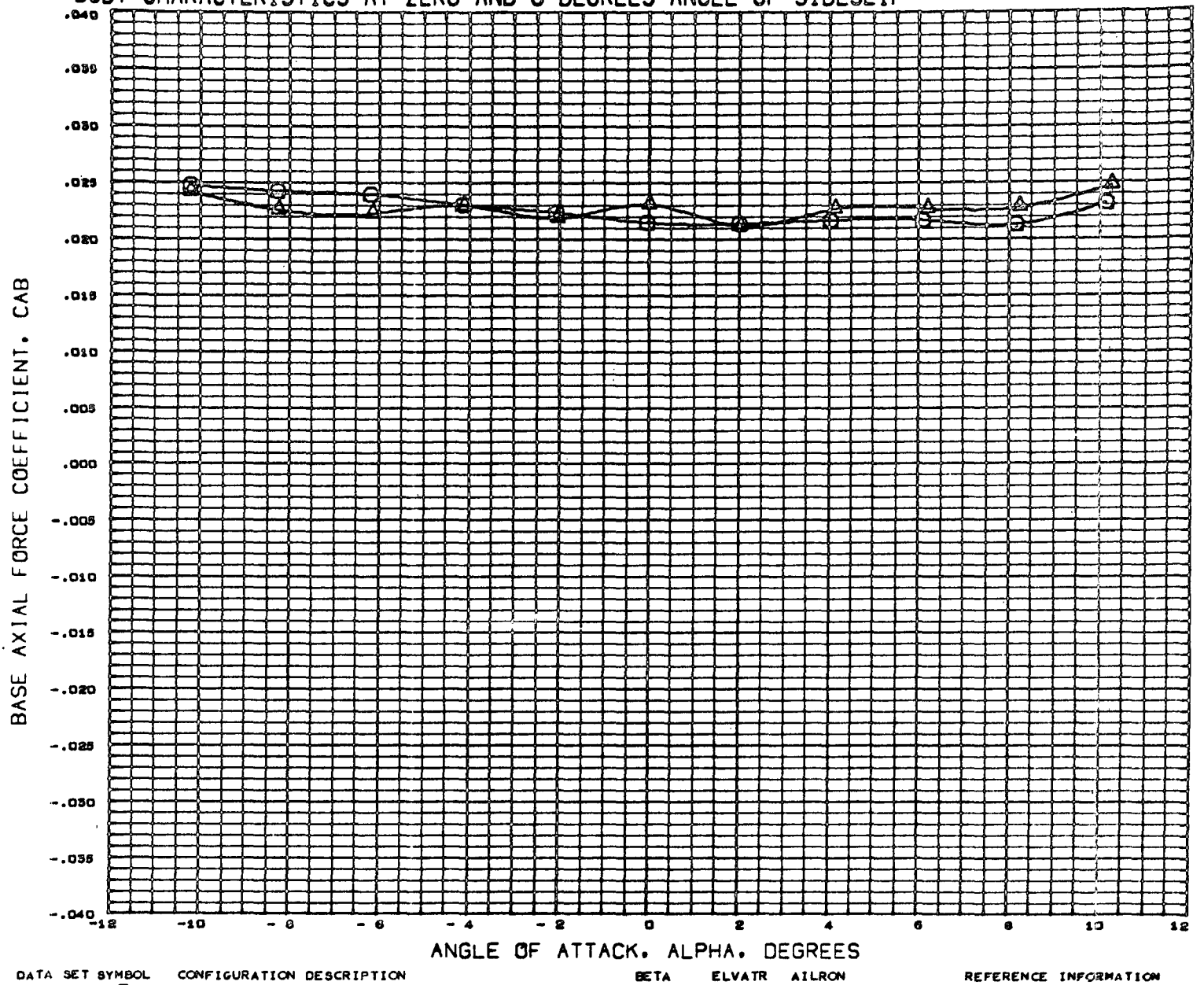


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(M3250A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.896

REFERENCE INFORMATION		
SREF	15.0960	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

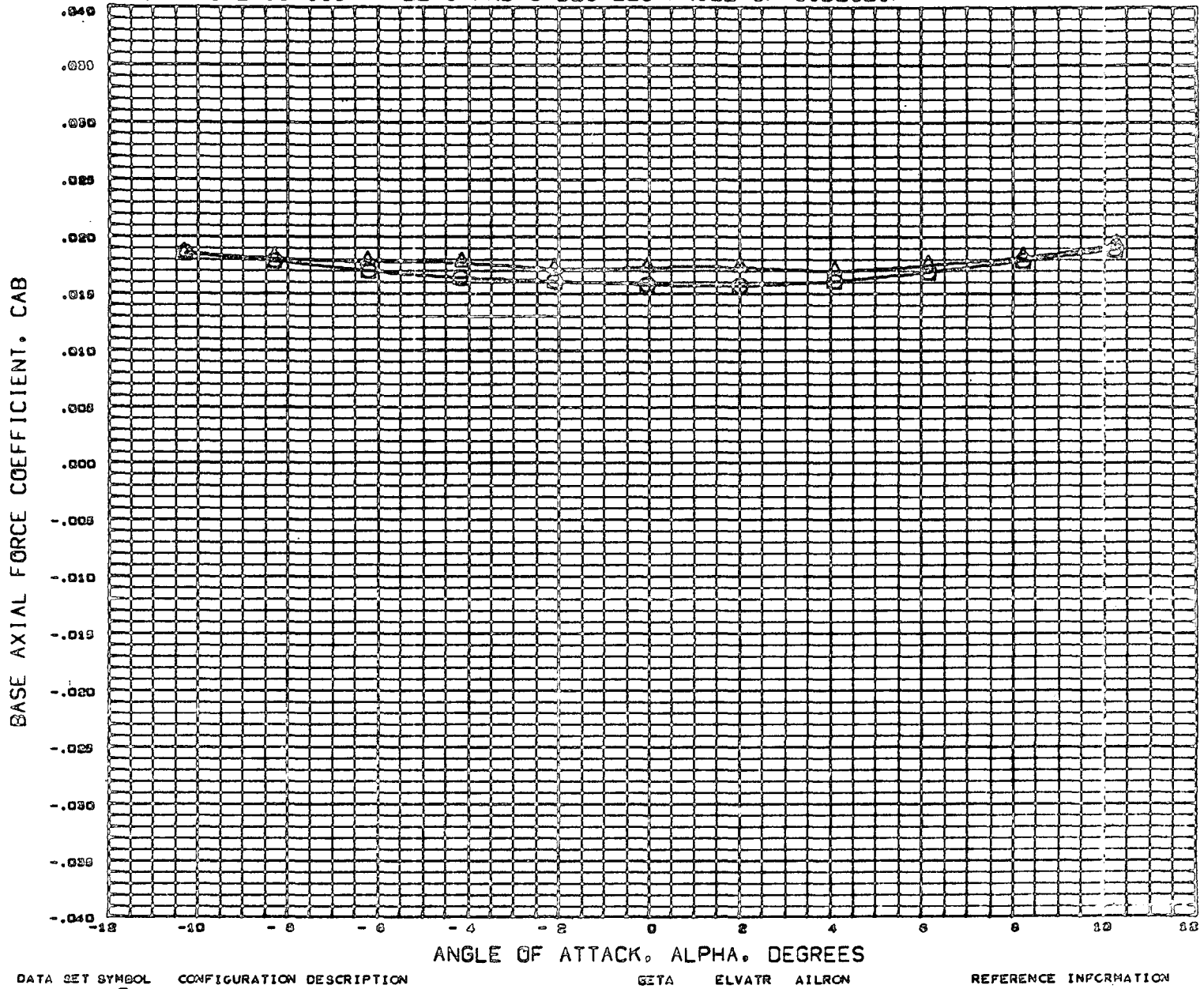


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B2U	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B2U	6.000		

MACH 1.098

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

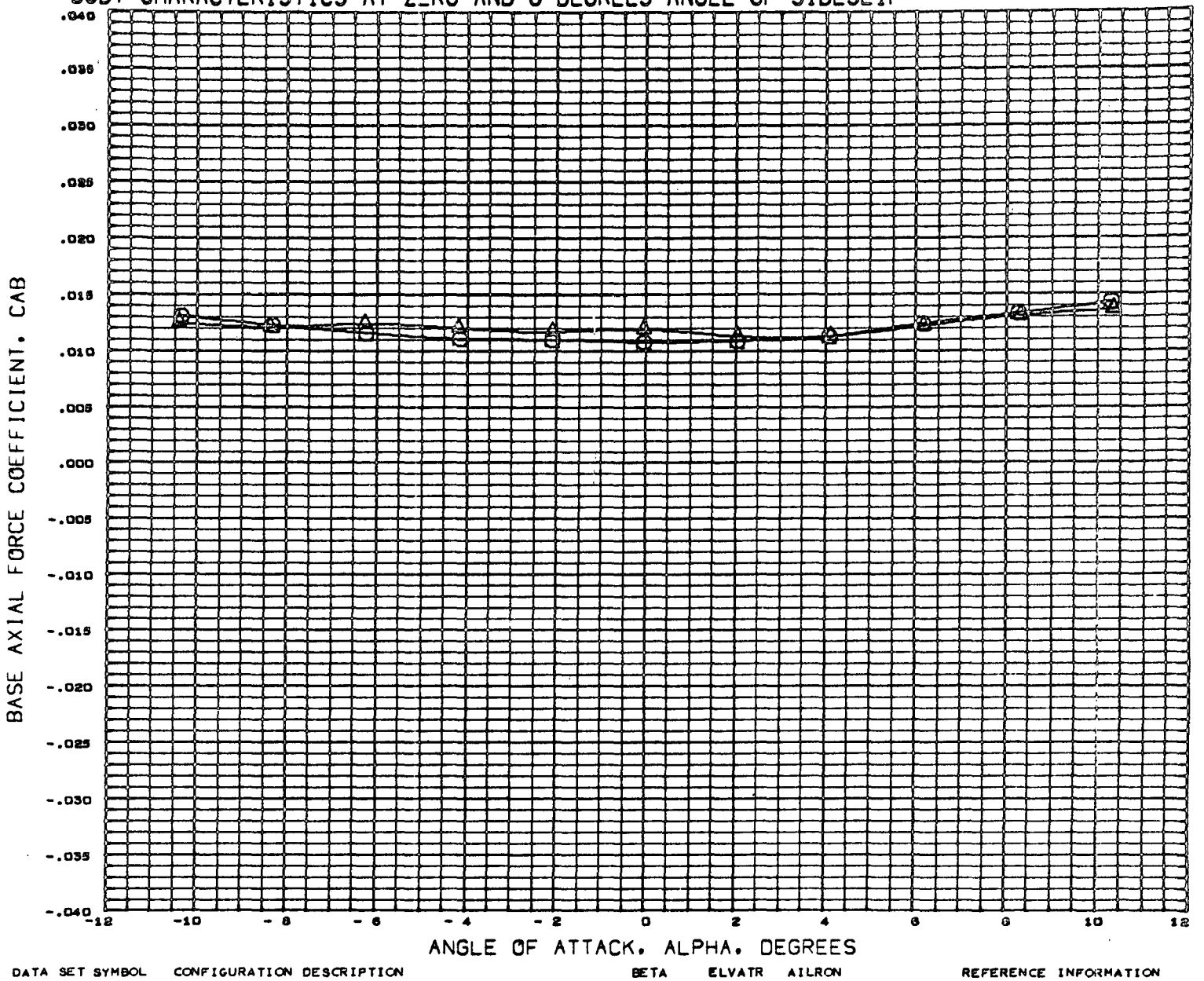


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	GETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M3298A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.473

REFERENCE INFORMATION		
SREF	15.0960	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

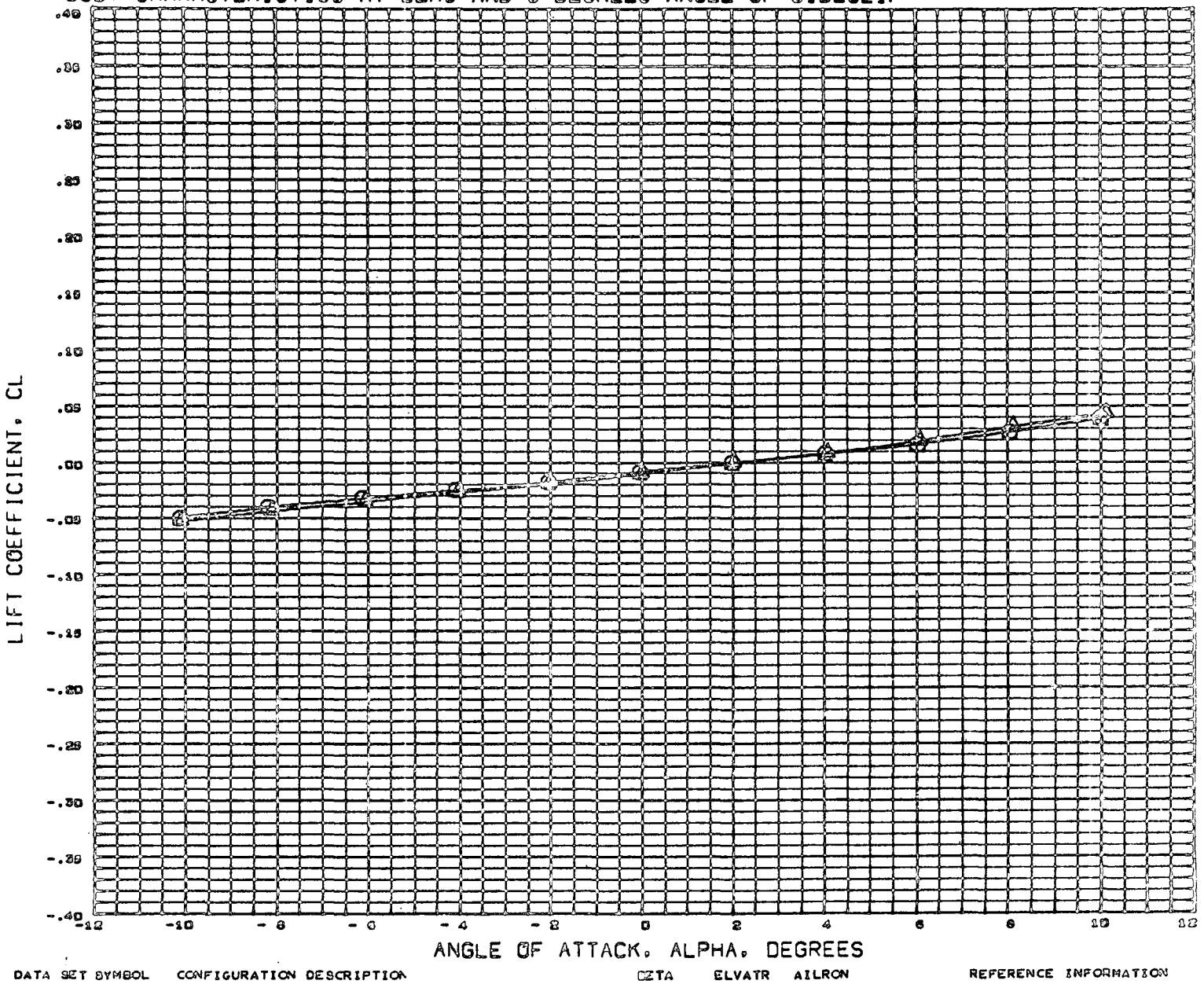


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6500	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

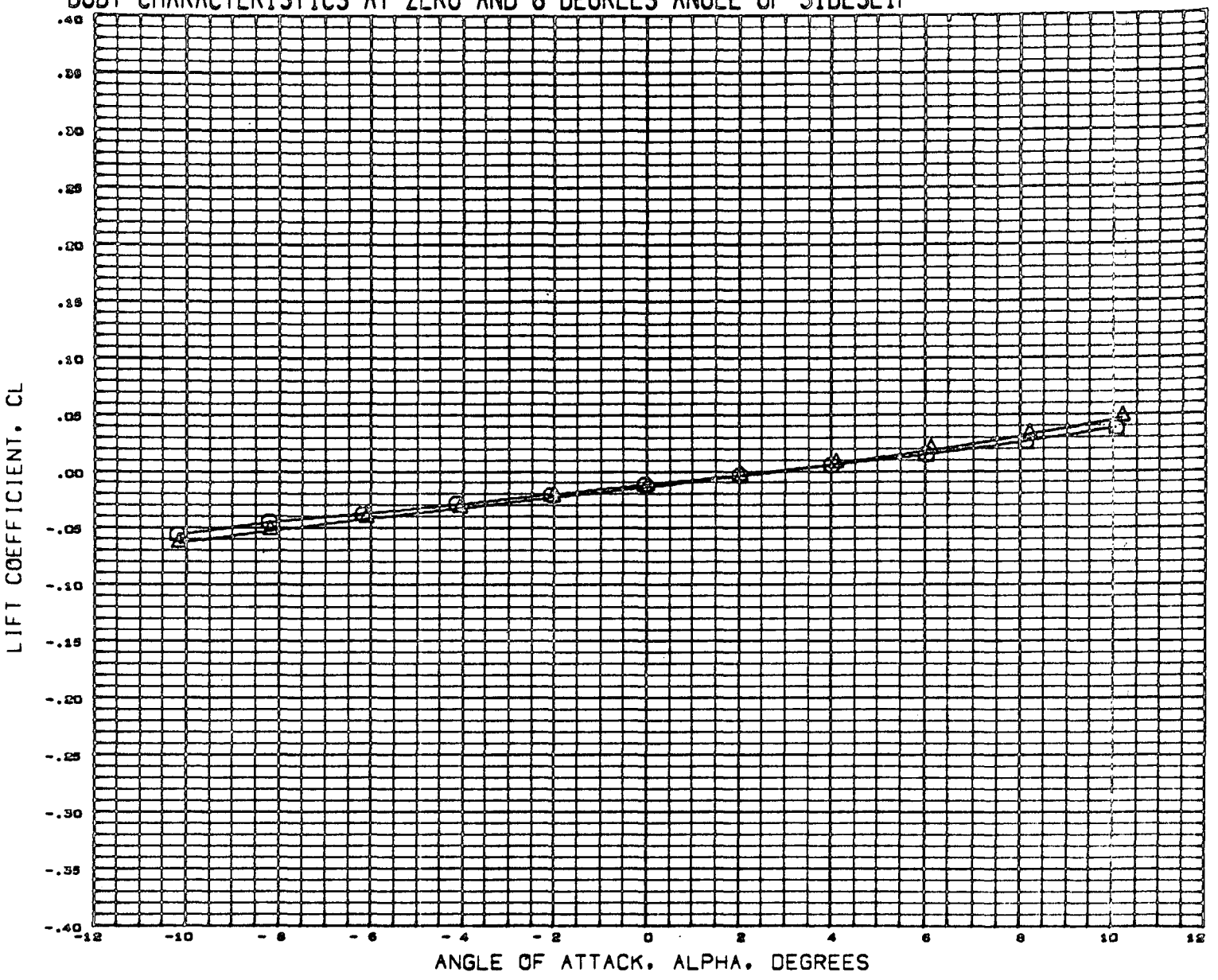


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	CZTA	ELVATR	AILRON
(M3201A)	○	M9FC490 GD DELTA BOOSTER B20	0.000		
(M3256A)	△	M9FC490 GD DELTA BOOSTER B20	0.000		

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0910	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

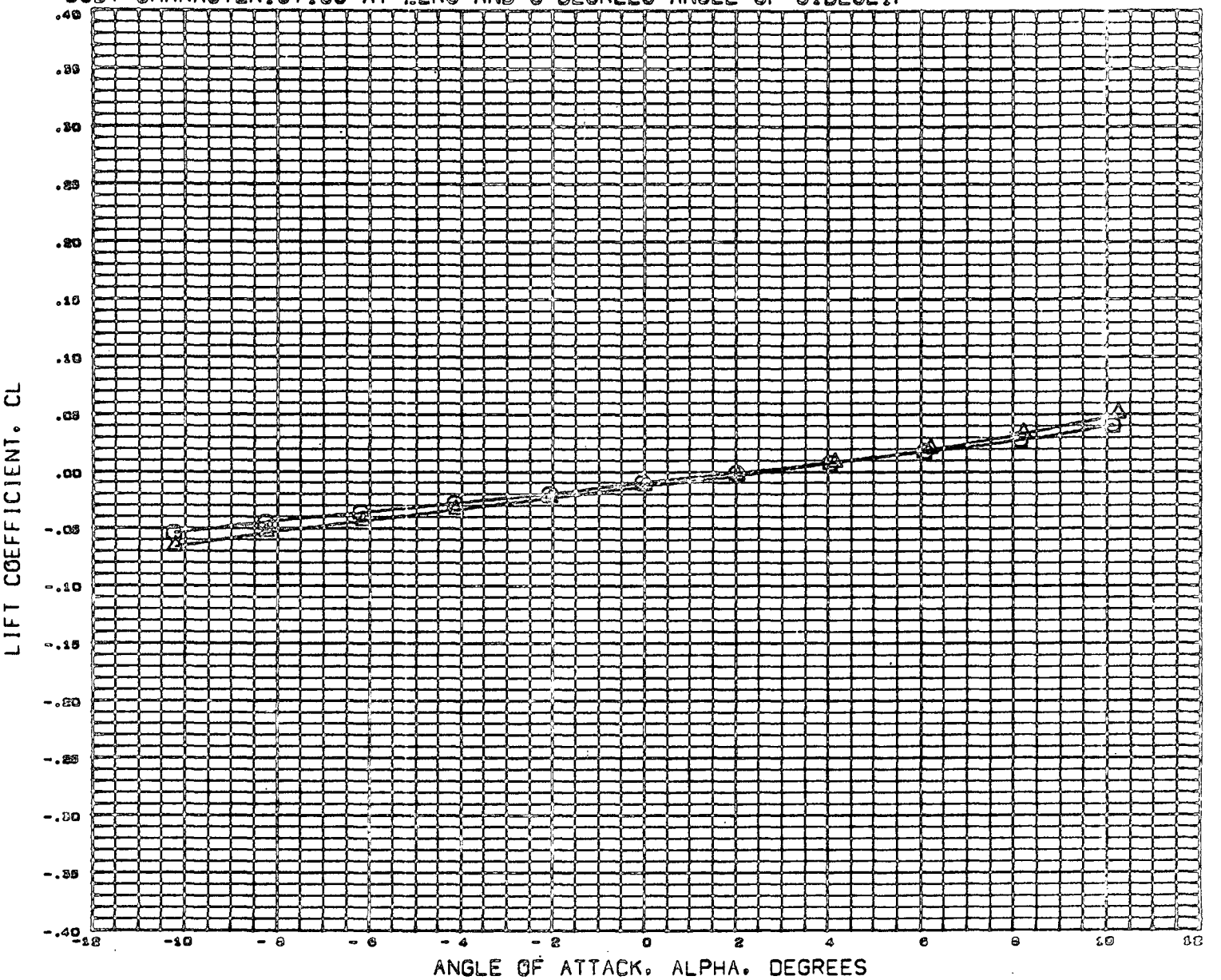


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.896

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

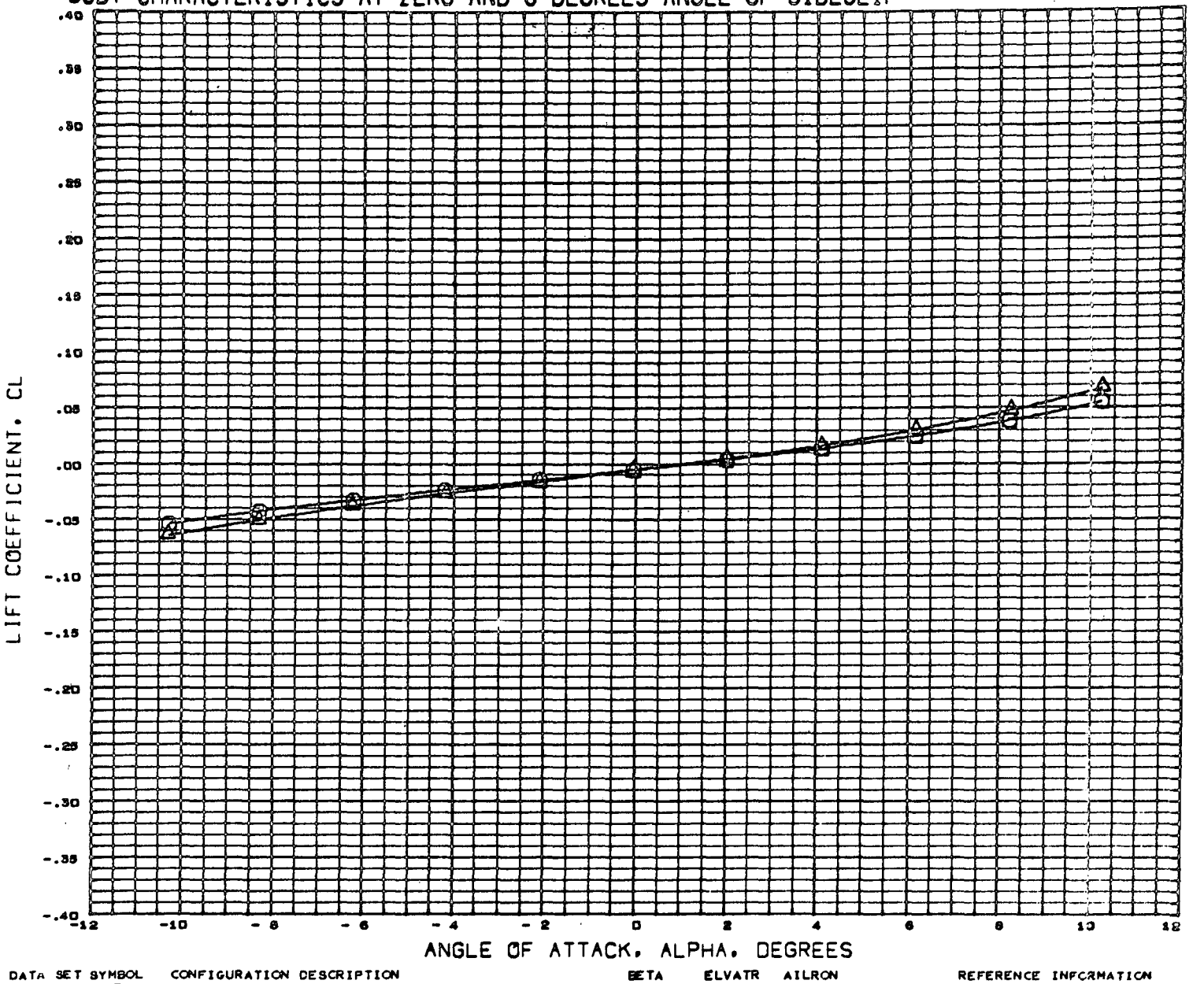


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B2D	0.000		
(M3250A)		MSFC490 GD DELTA BOOSTER B2D	0.000		

MACH 1.090

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0850	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

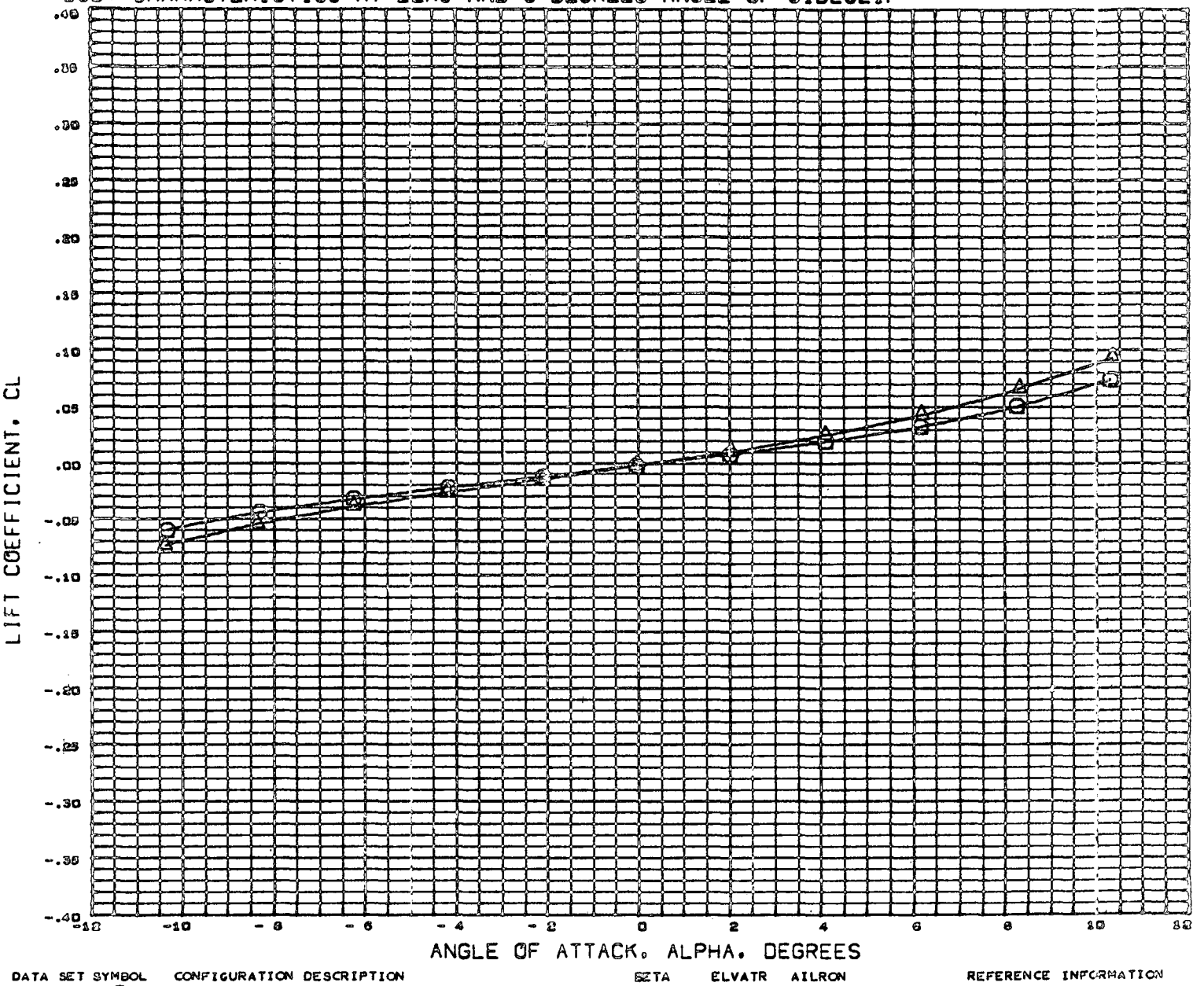


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.473

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

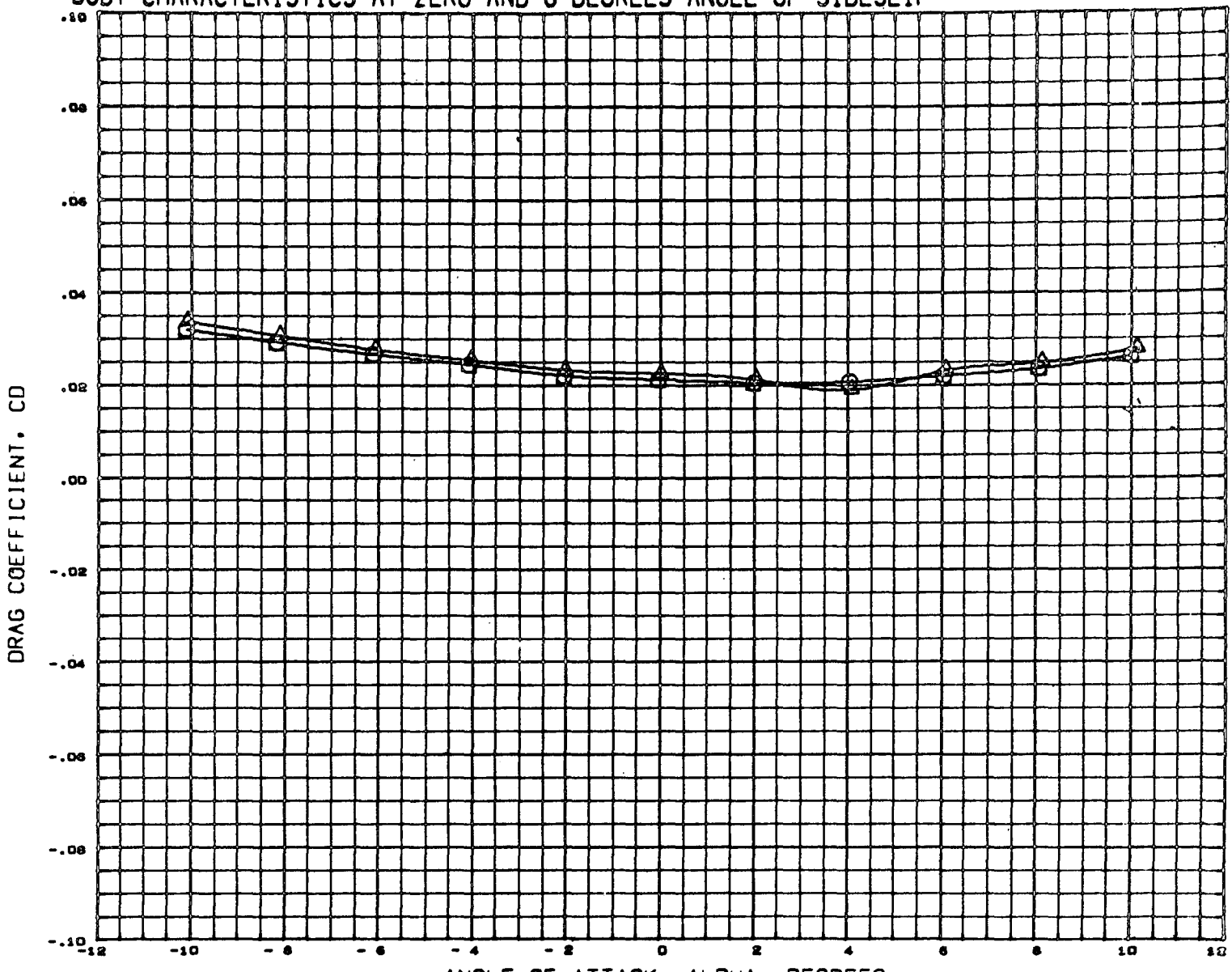


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3231A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M3259A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.959

REFERENCE INFORMATION		
SREF	19.6960	SQ IN
LREF	5.0000	INCHES
BREF	6.0000	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

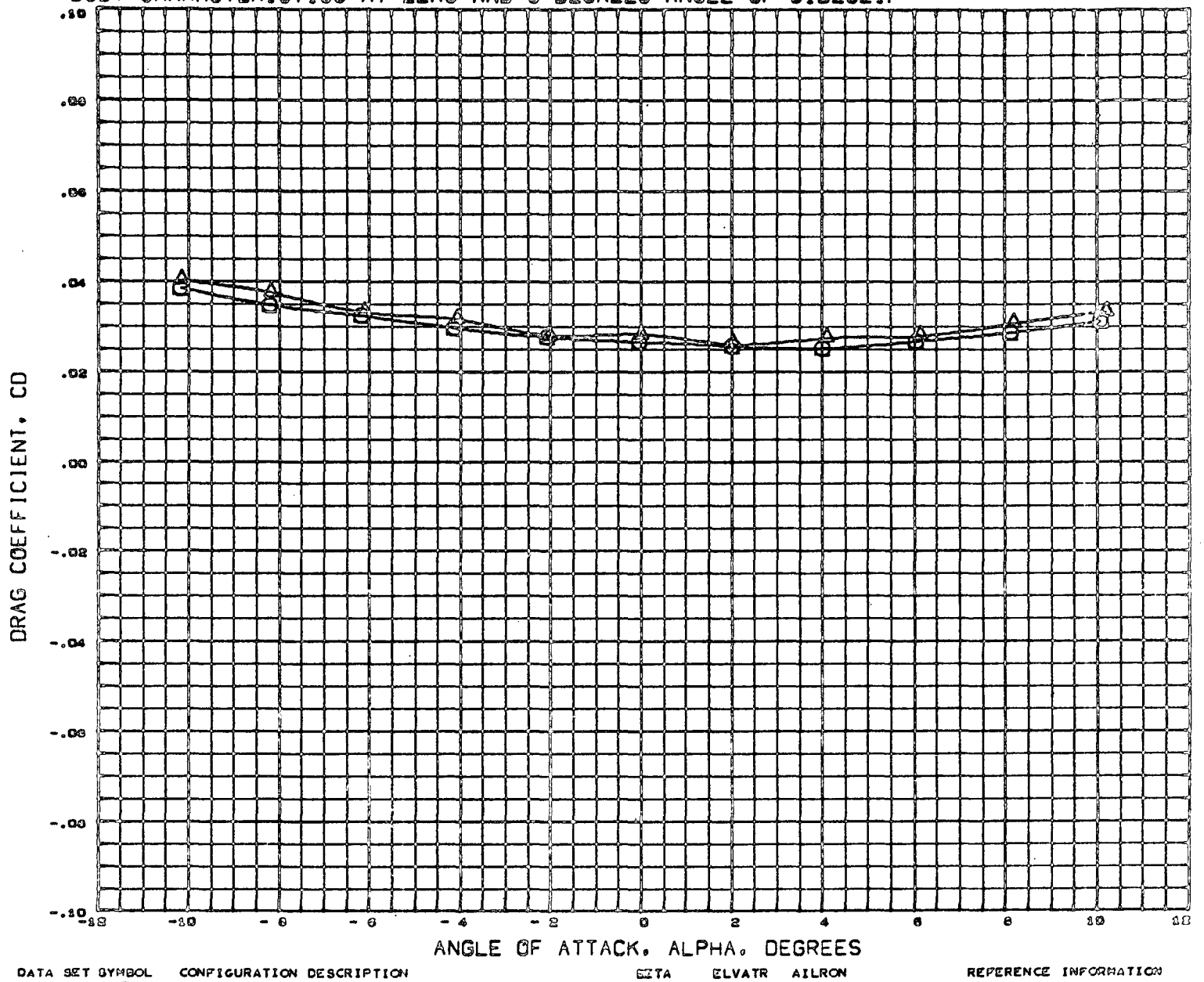


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

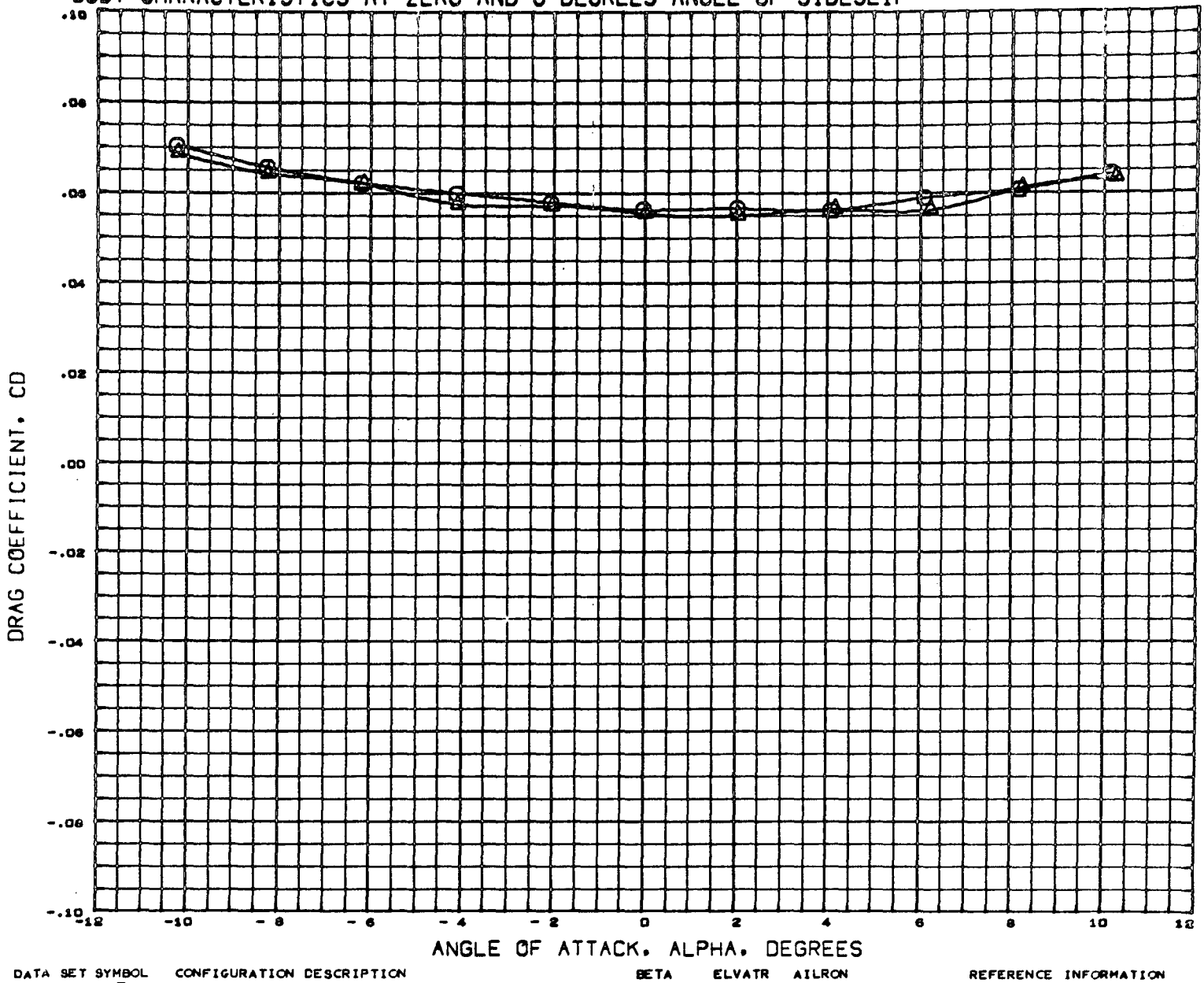


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M5201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M5258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.800

REFERENCE INFORMATION		
SREF	15.0900	SQ IN
LREF	5.0000	INCHES
BREF	6.0800	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

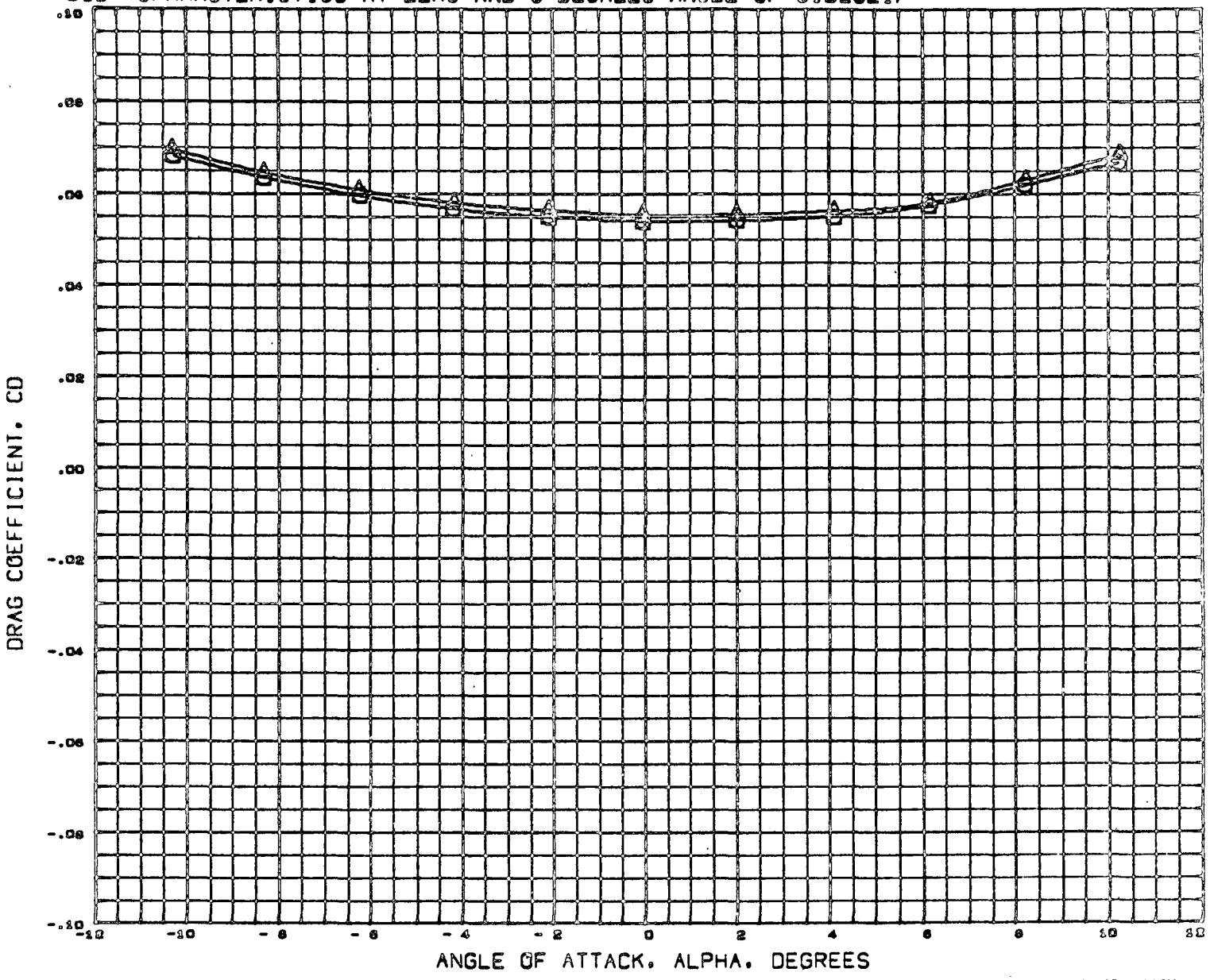


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.098

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

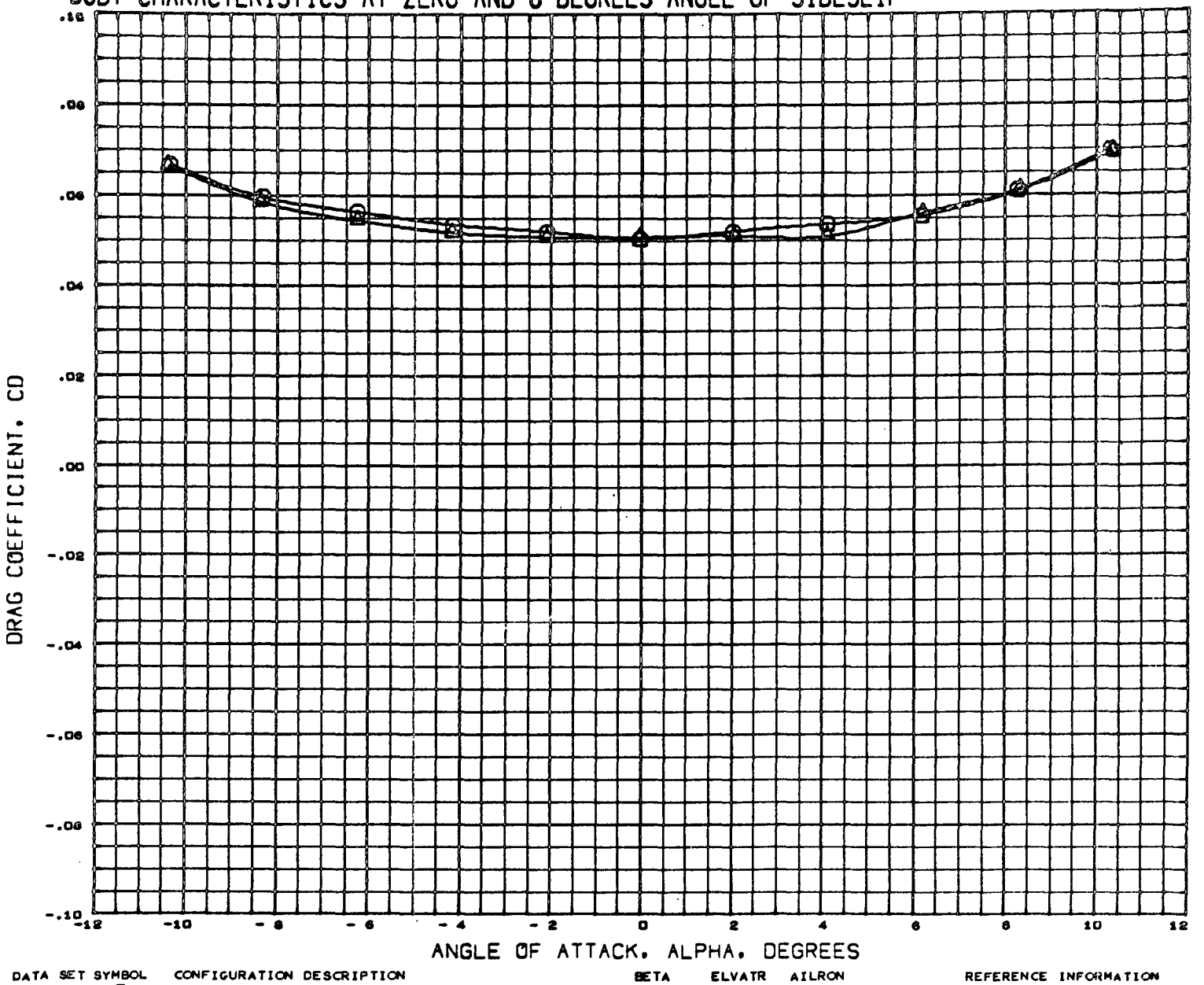


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3250A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.475

REFERENCE INFORMATION		
SREF	15.6960	DO IN
LREF	3.0950	INCMZO
BREF	6.0990	INCMZB
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



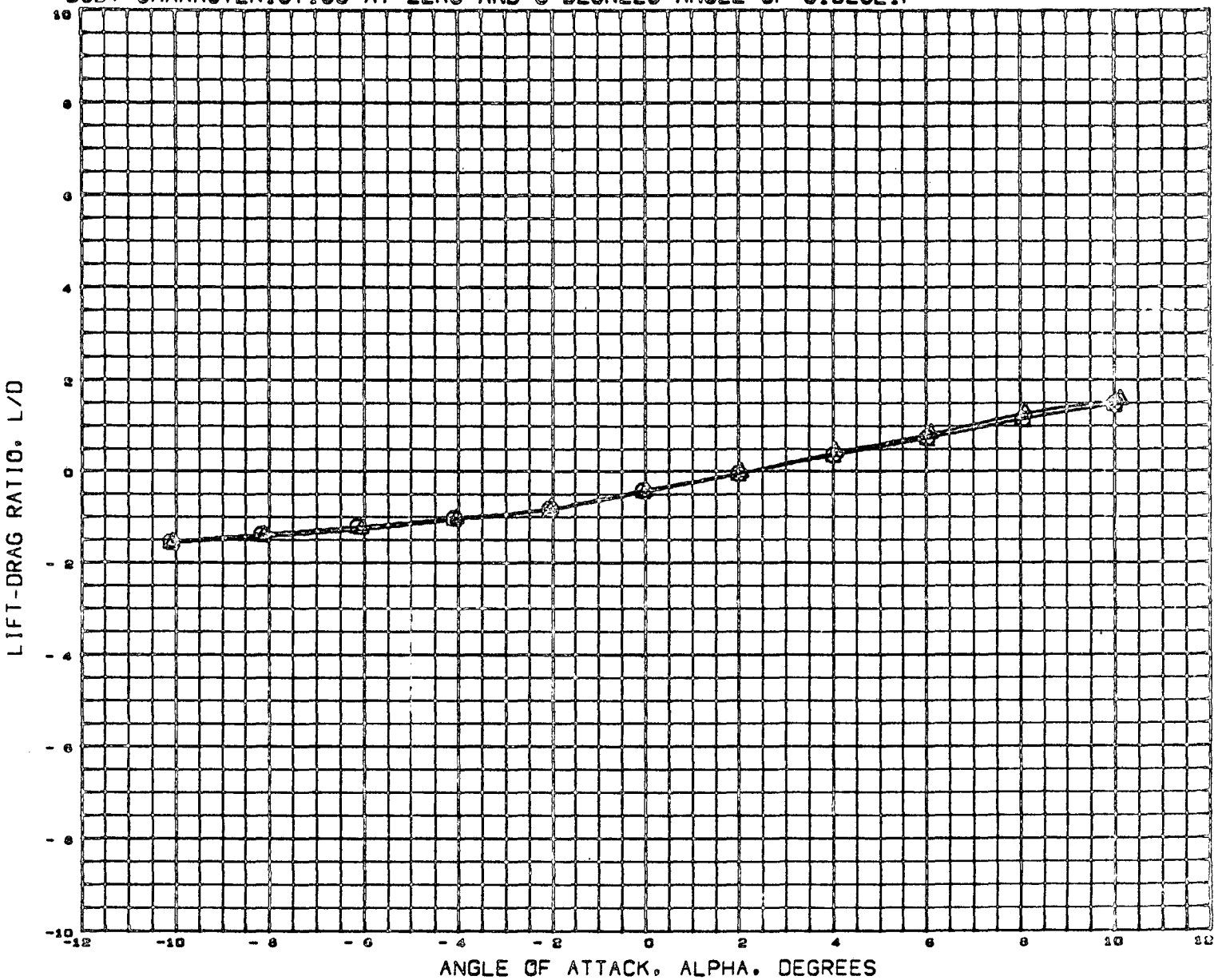
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.959

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



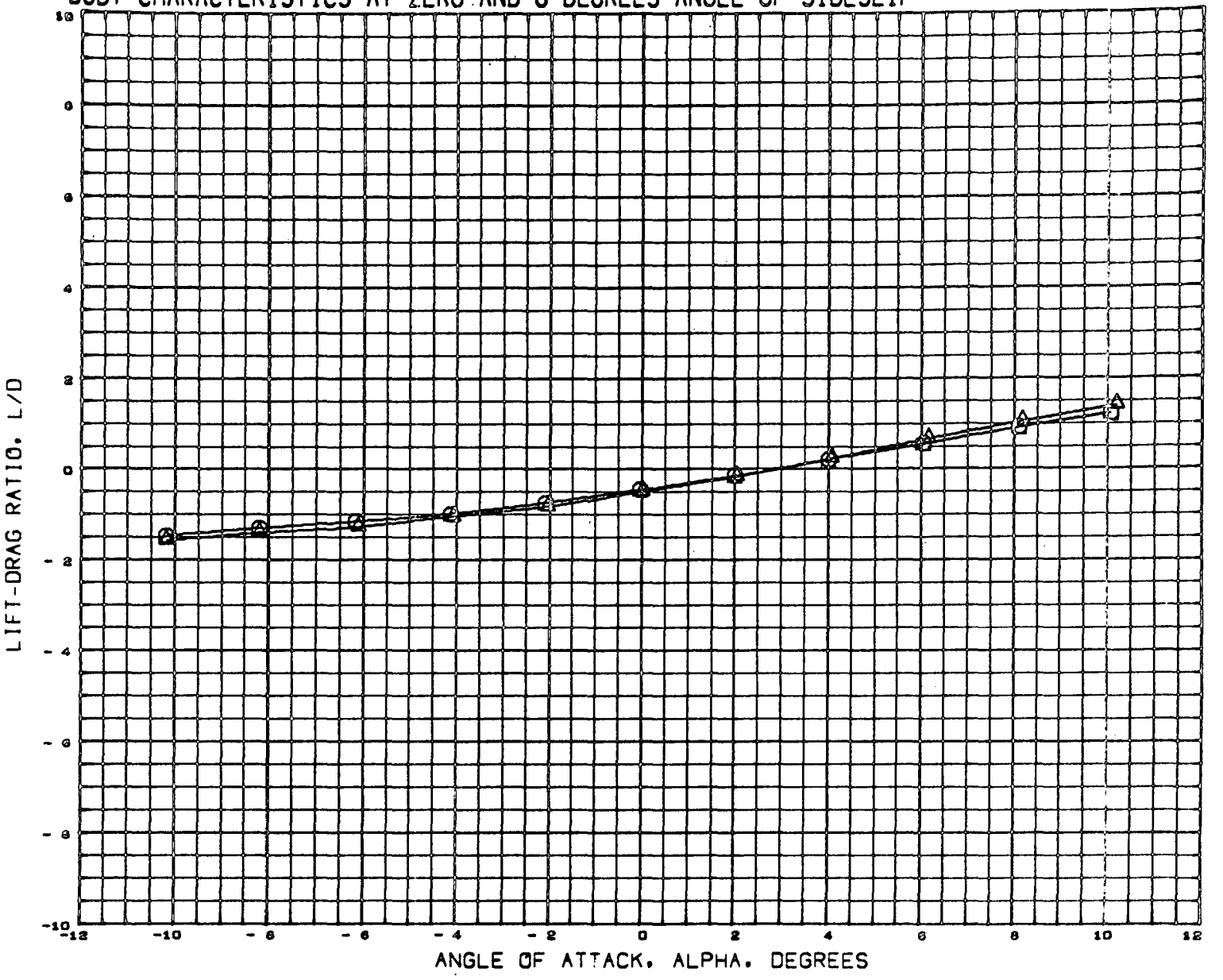
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M3250A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.600

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0030	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



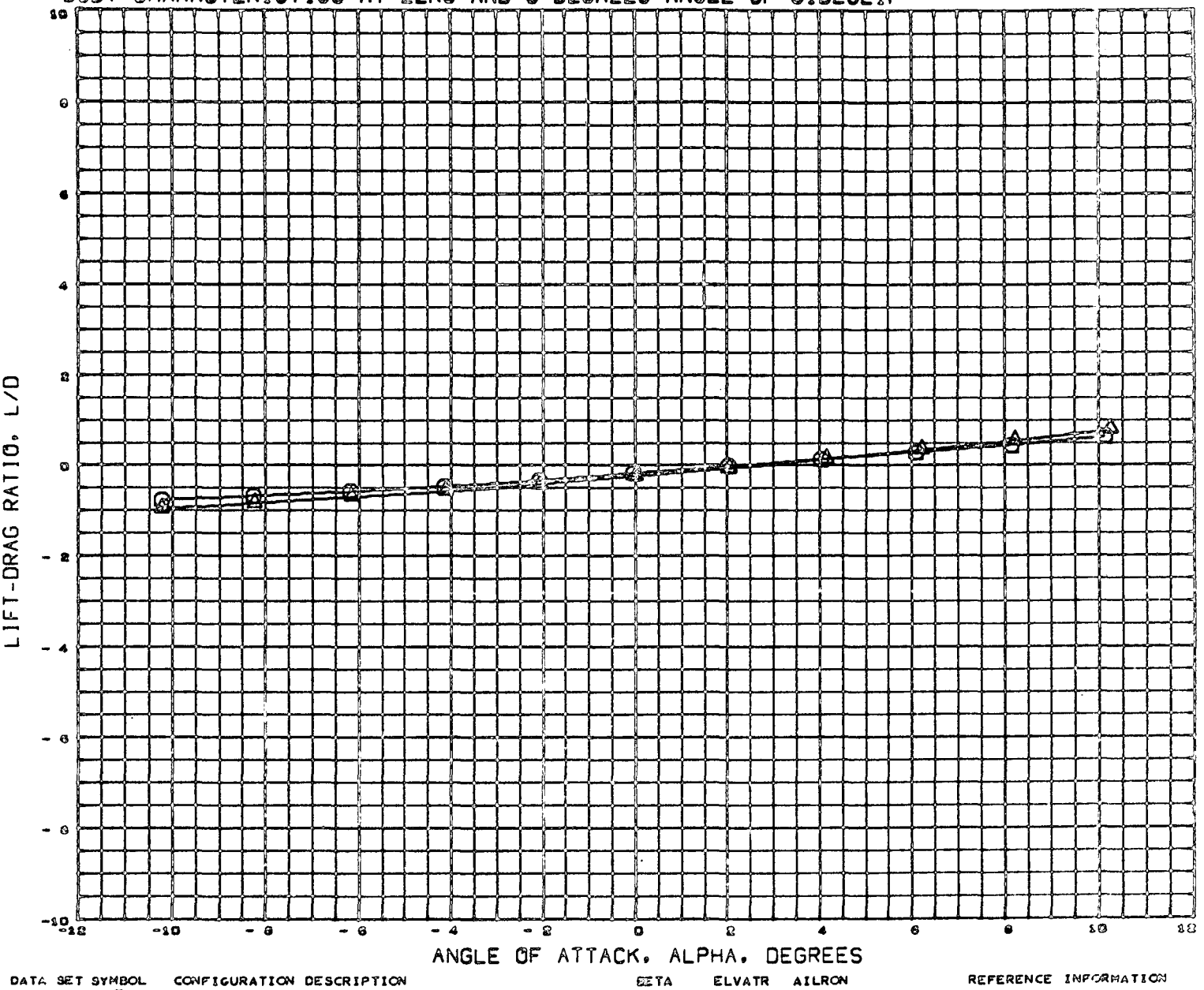
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.896

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



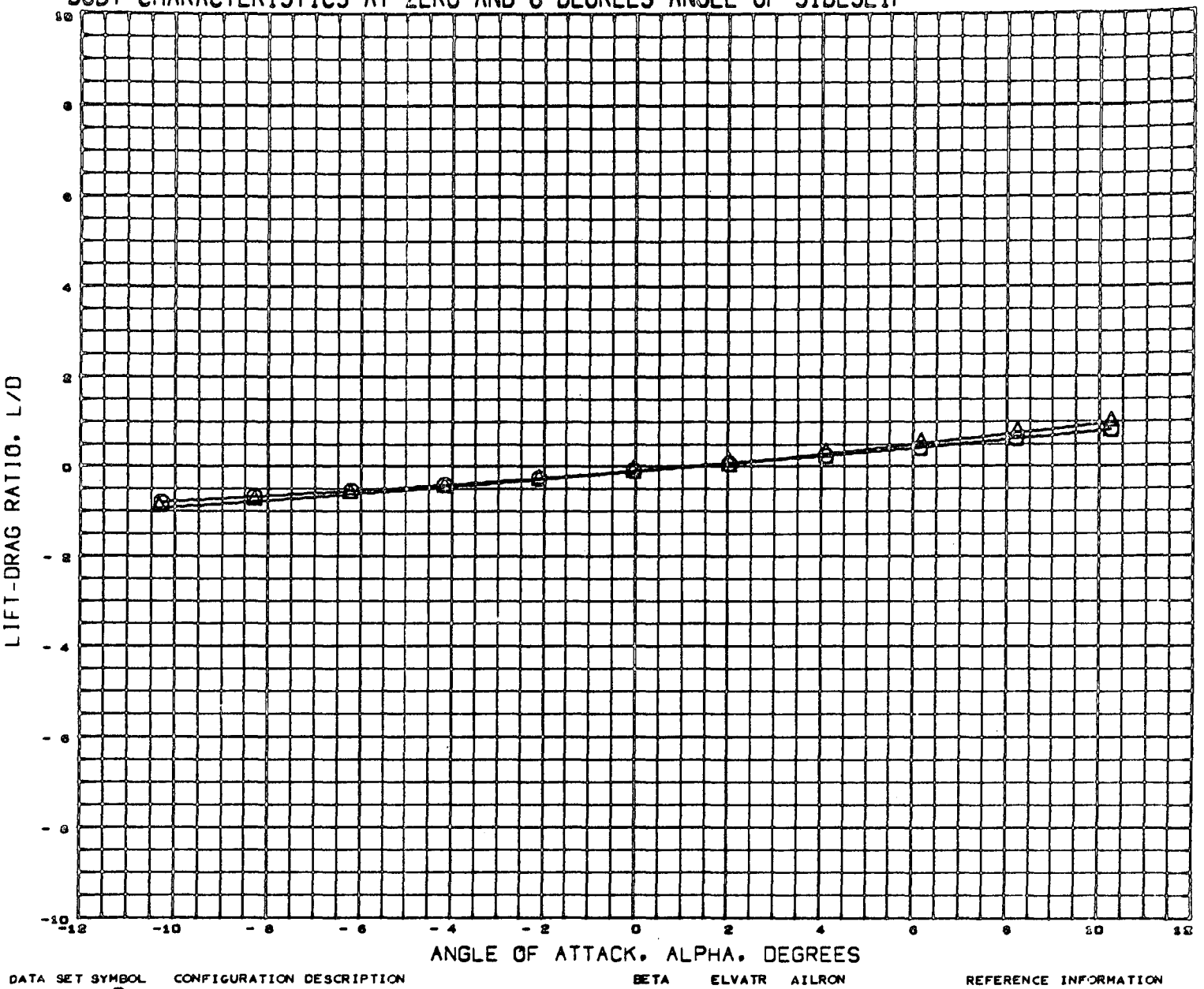
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3250A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.090

REFERENCE INFORMATION

SREF	15.6900	90 IN
LREF	3.0850	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

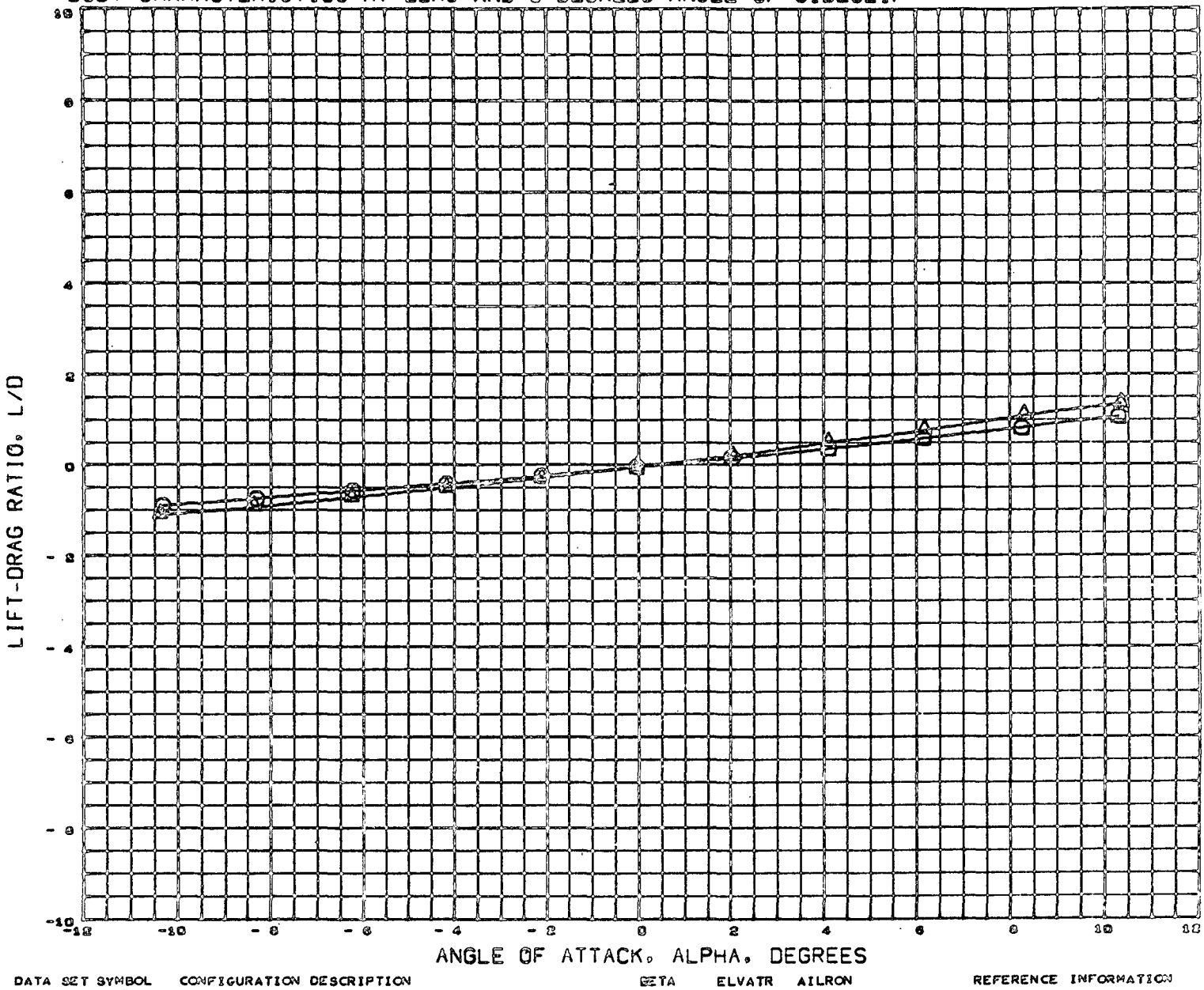


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(M3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.473

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



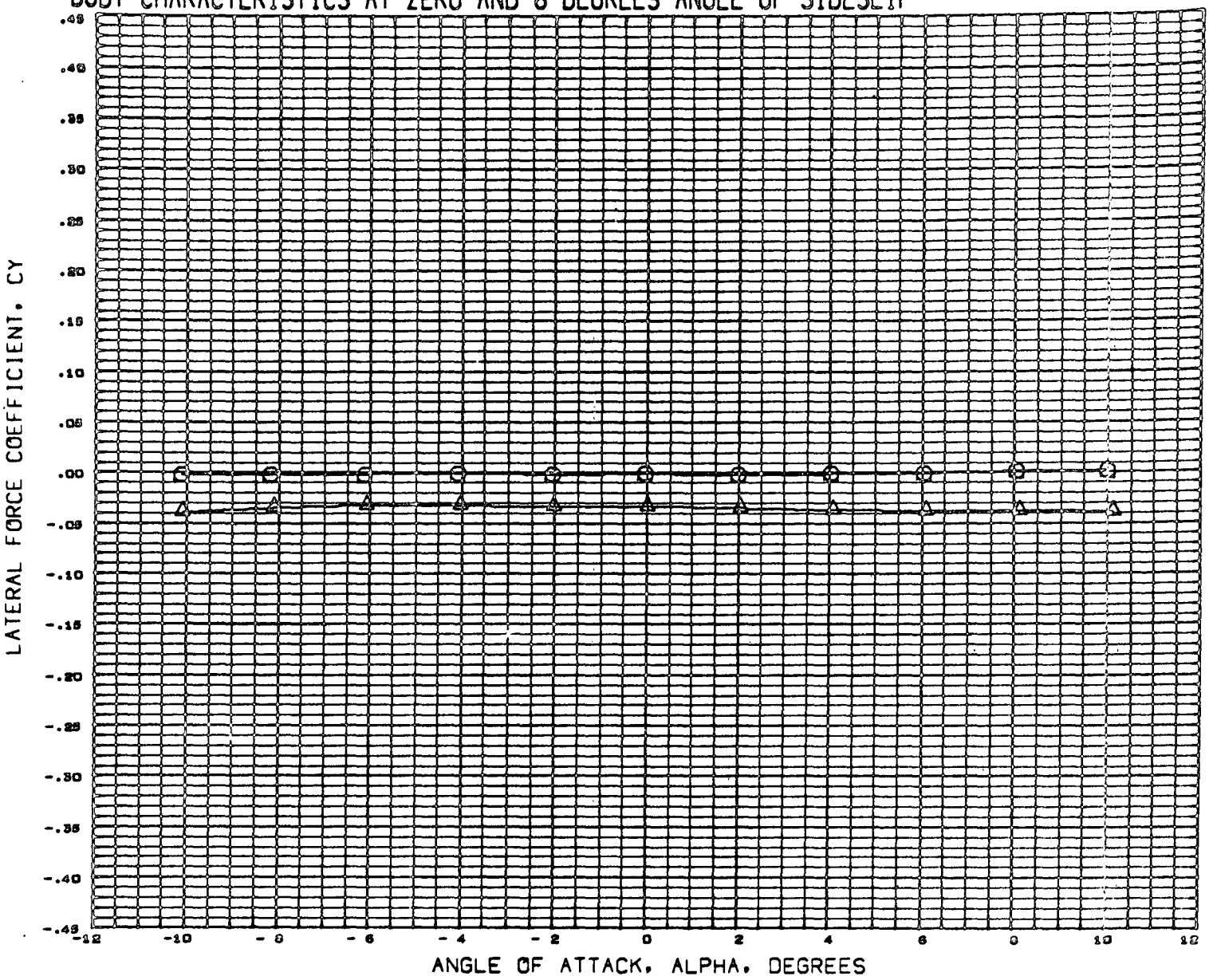
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(M3298A)	△	MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.059

REFERENCE INFORMATION

SREF	15.6900	SQ IN
LREF	3.0000	INCHES
BREF	6.0000	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



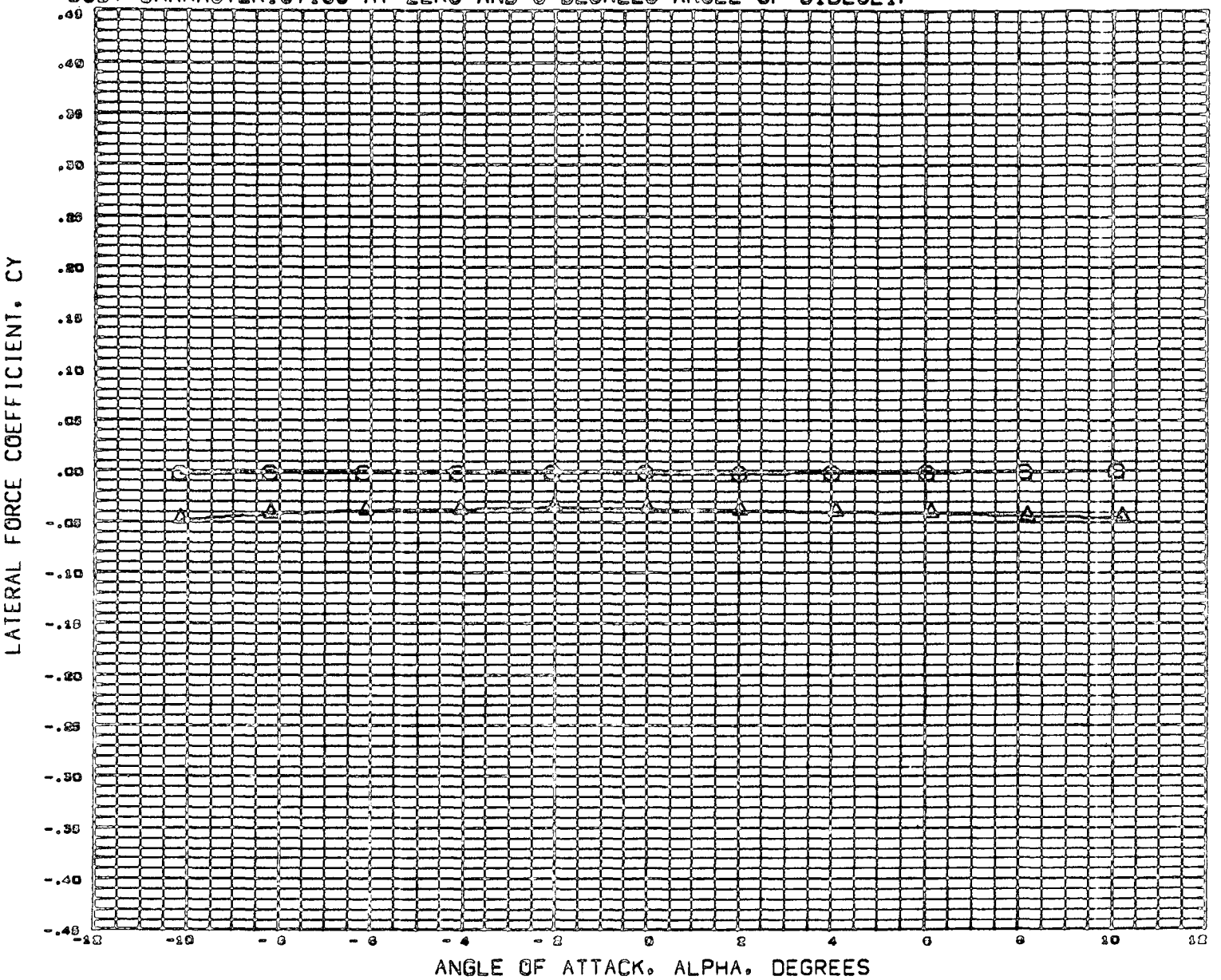
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(A3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.600

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



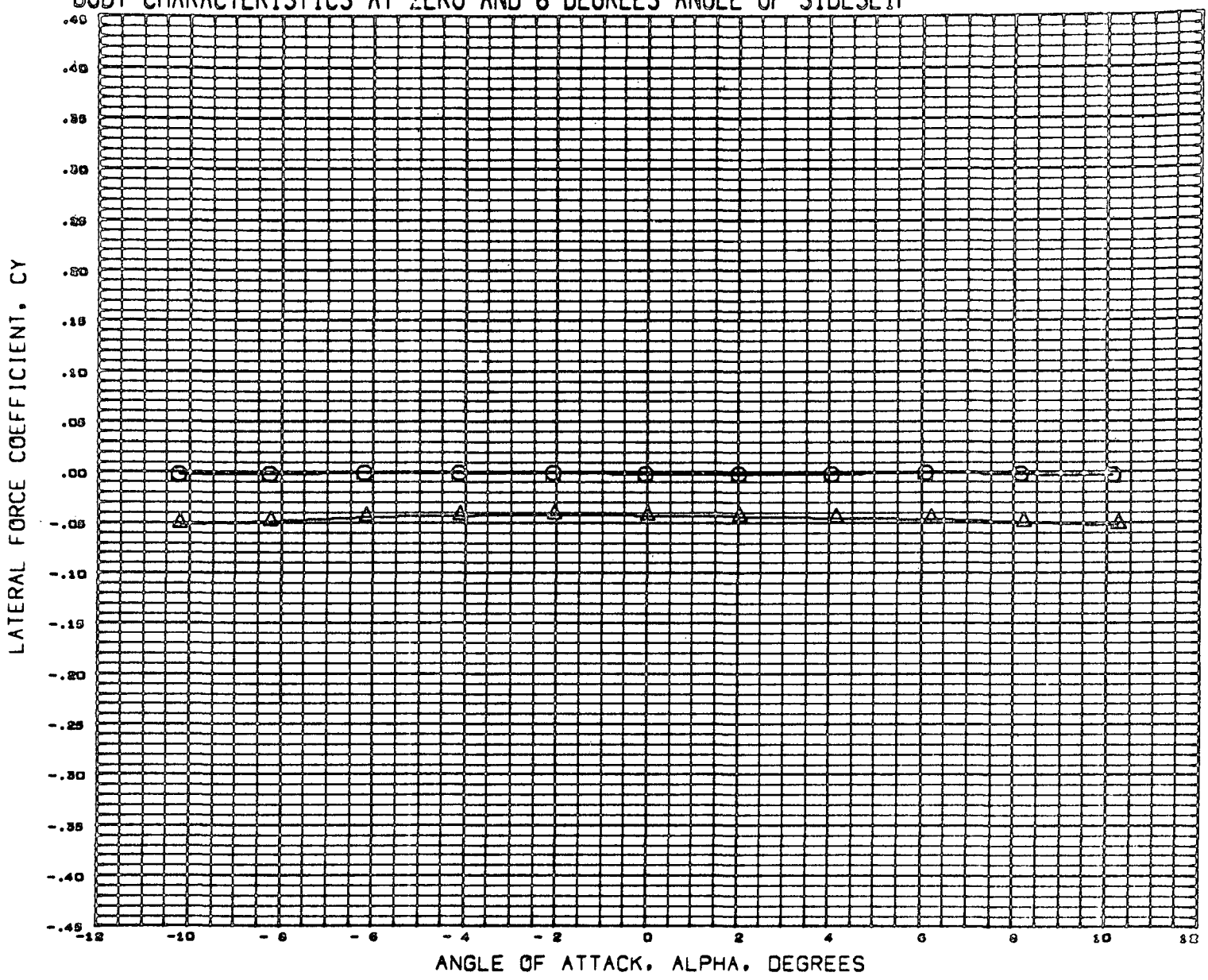
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)	○	M8FC490 GD DELTA BOOSTER 820	0.000		
(A3250A)	△	M8FC490 GD DELTA BOOSTER 820	6.000		

MACH 0.800

REFERENCE INFORMATION

SREF	19.0500	SQ IN
LREF	5.0090	INCHES
BREF	0.0090	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

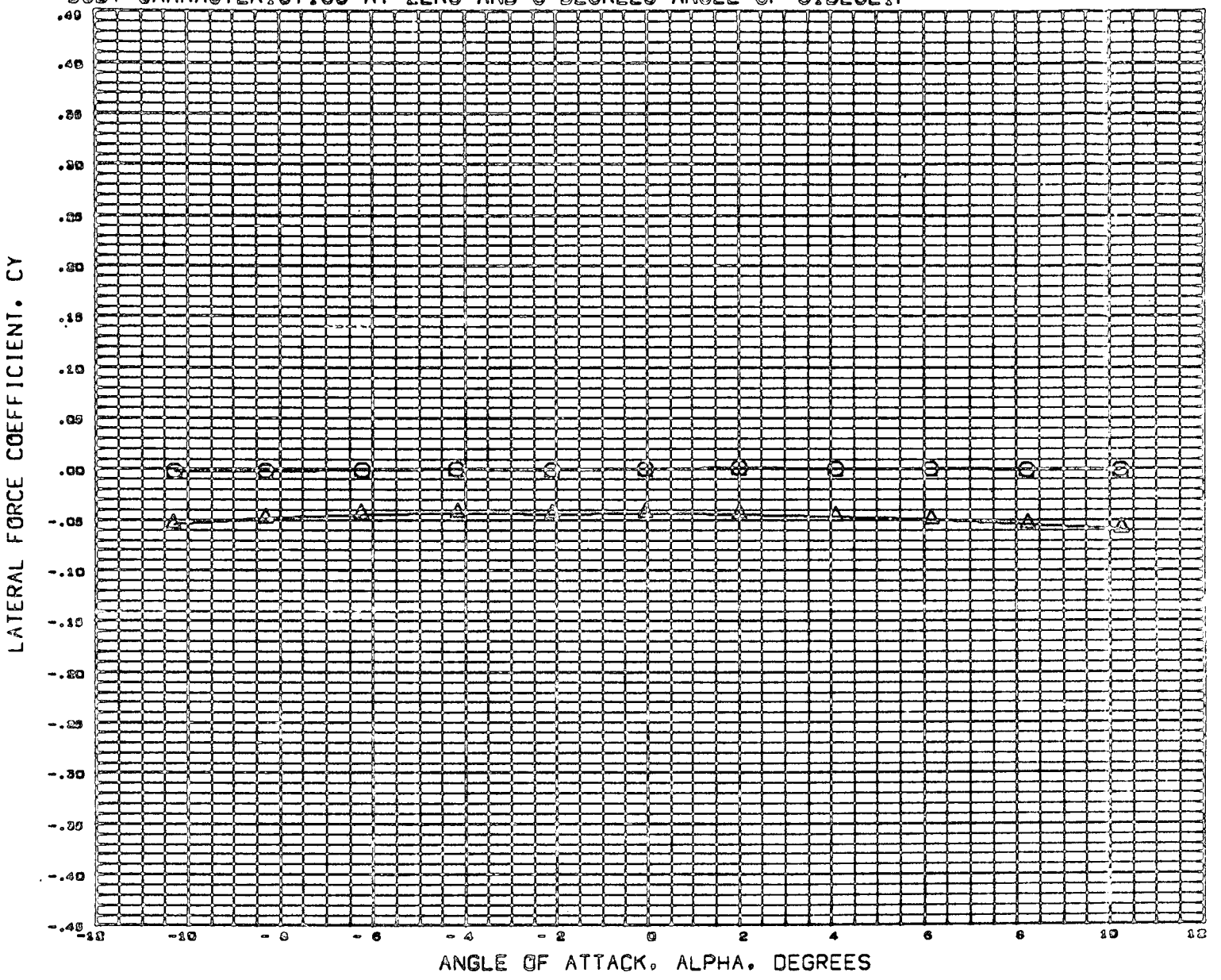


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(A3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.098

REFERENCE INFORMATION		
SREF	19.6360	SQ IN
LREF	5.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

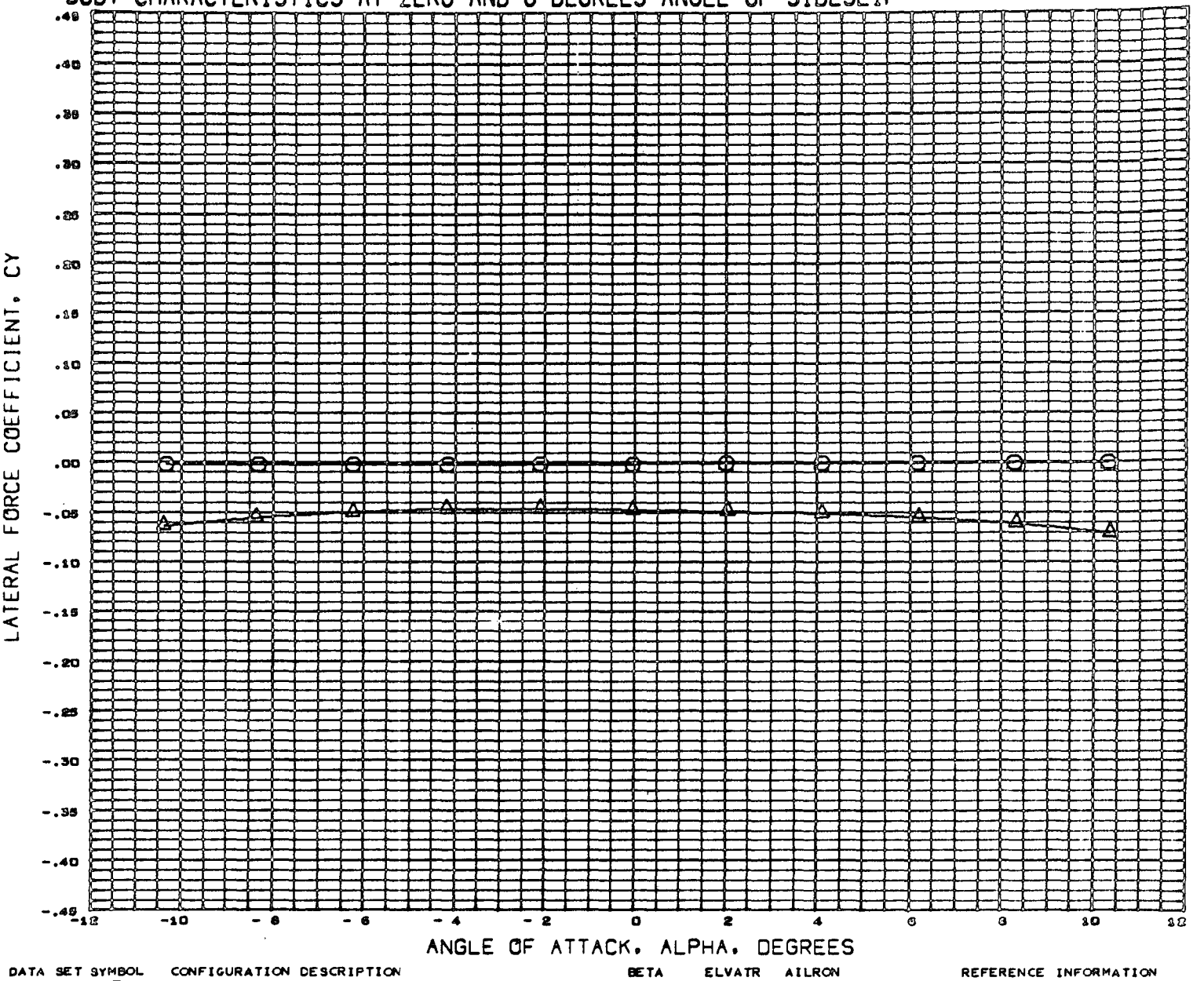


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ETA	ELVATR	AILRON
(A3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(A3250A)	△	MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.473

REFERENCE INFORMATION		
SREF	15.696	SQ IN
LREF	3.095	INCHES
BREF	6.099	INCHES
XMRP	0.000	
YMRP	0.000	
ZMRP	0.000	
SCALE	0.003	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

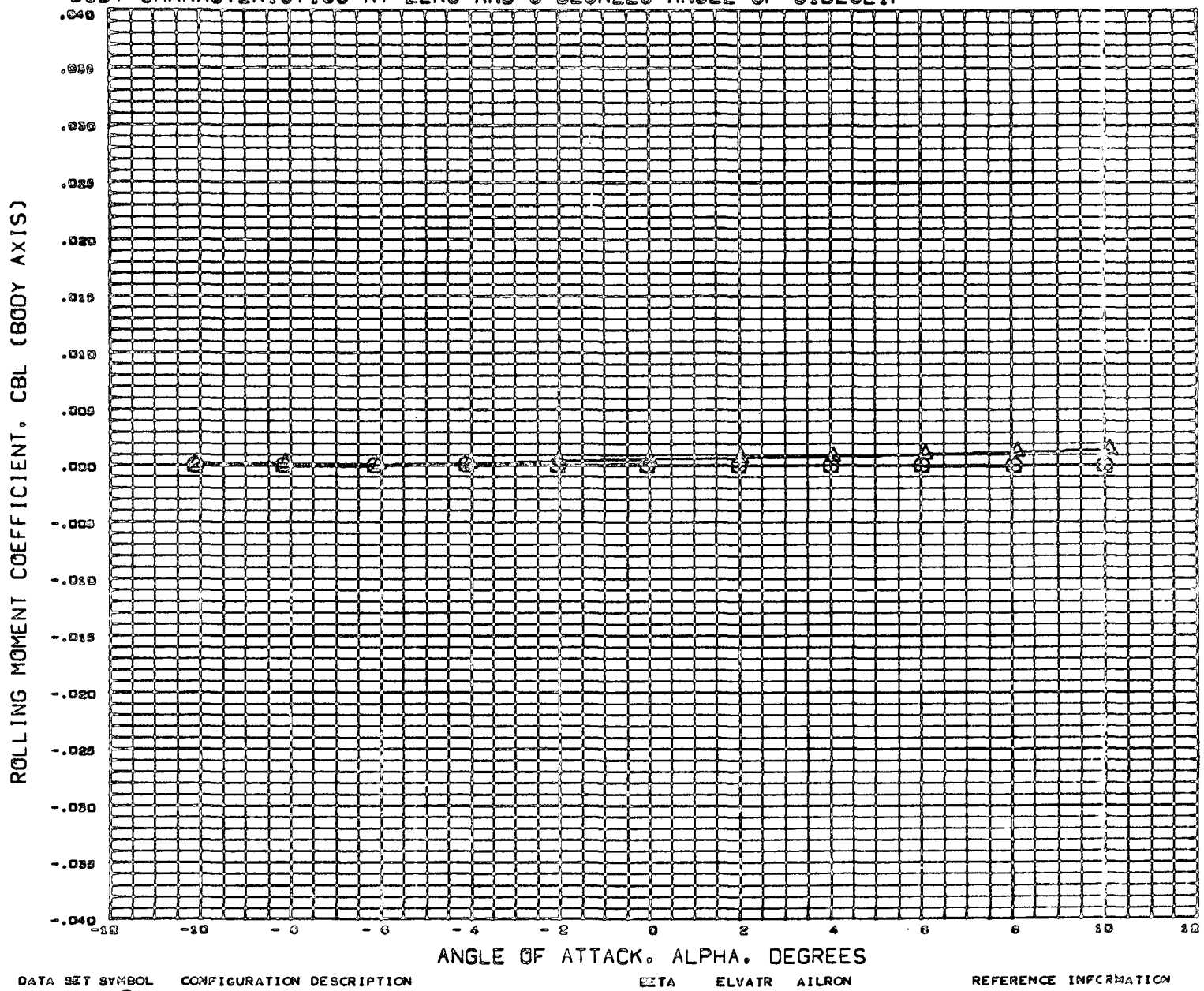


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(A3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

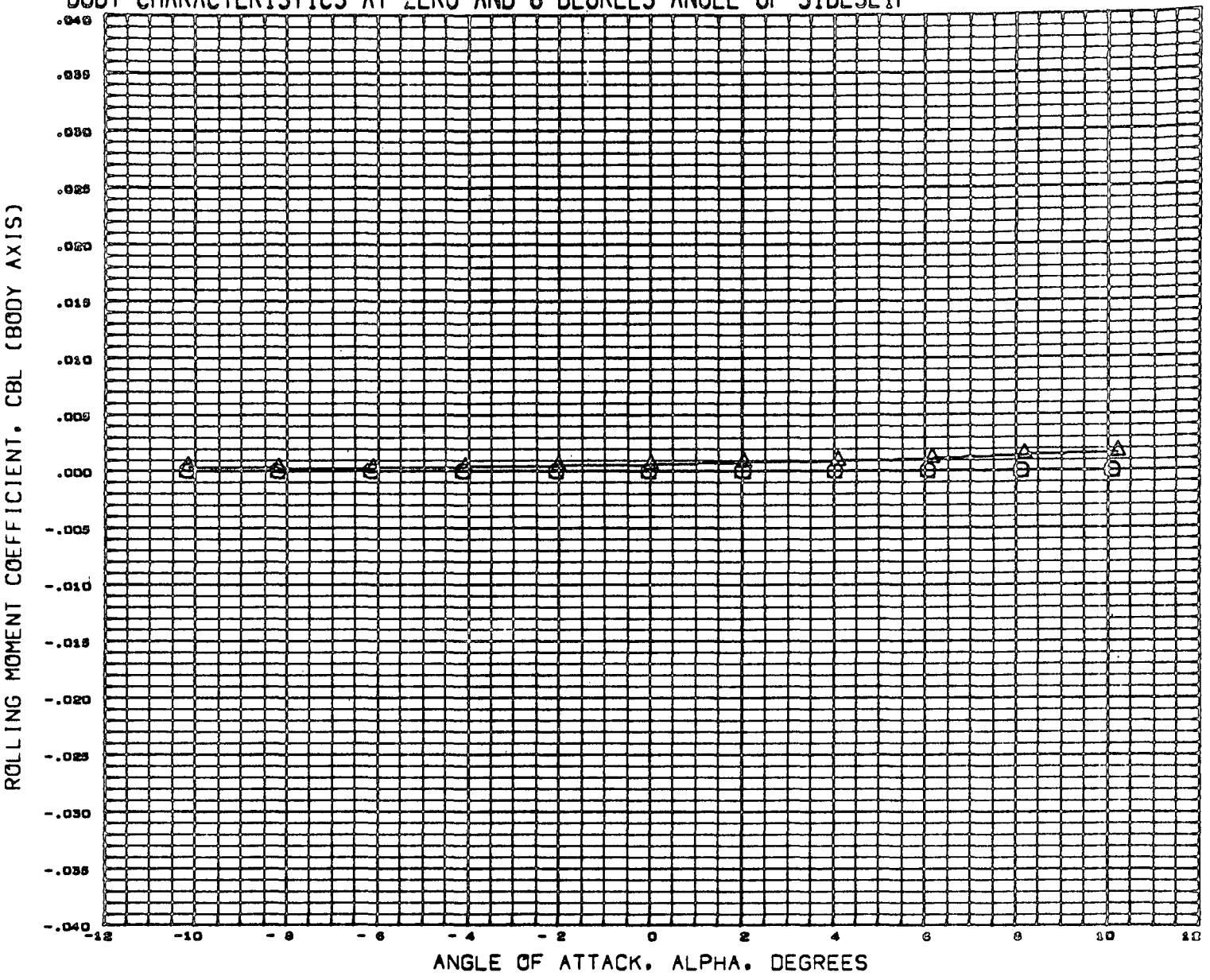


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ETA	ELVATR	AILRON
(A3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(A3298A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6960	90 IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)		MSFC490 GD DELTA BOOSTER B2D	0.000		
(A3250A)		MSFC490 GD DELTA BOOSTER B2D	6.000		

MACH 0.896

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0033	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

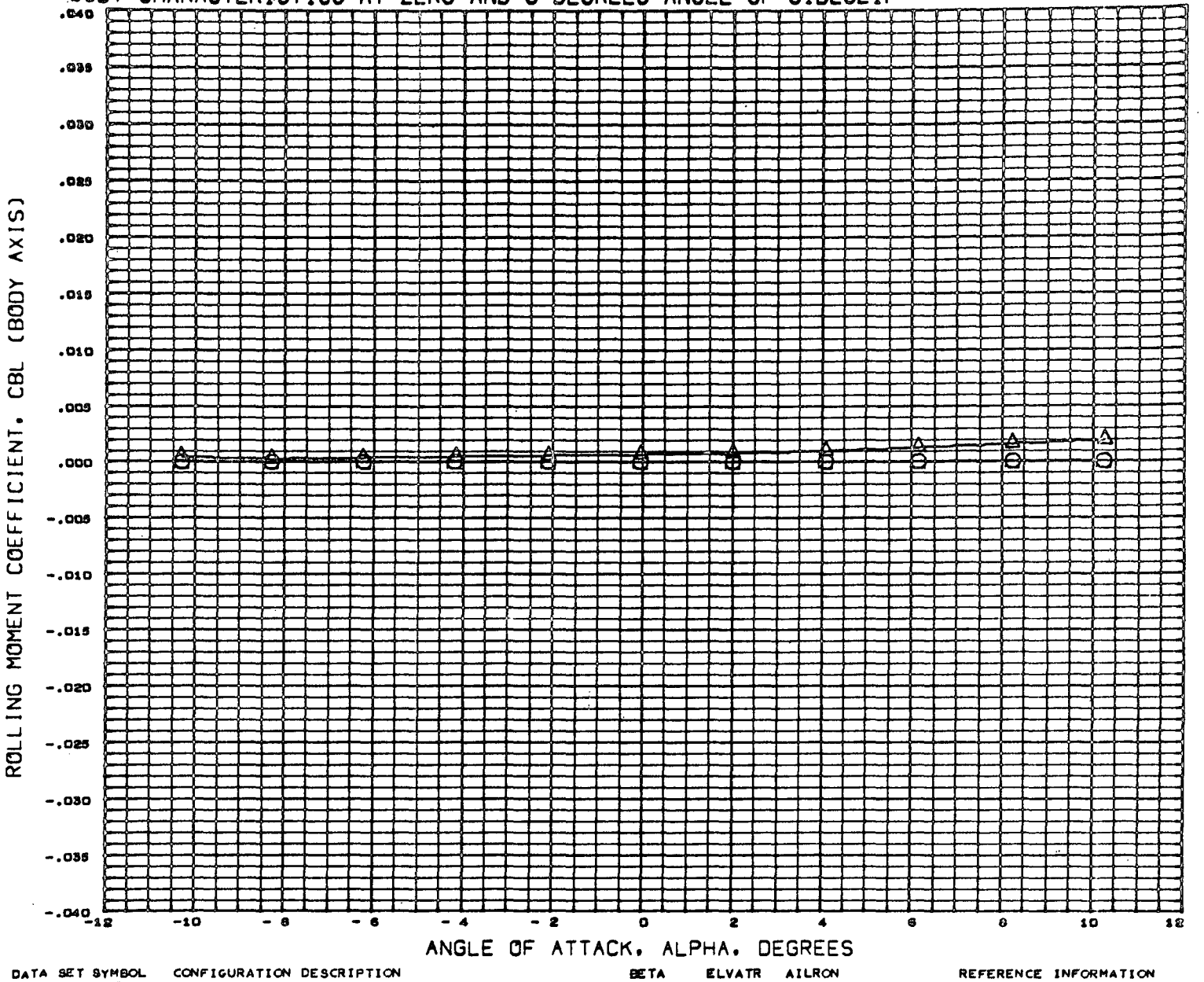
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	ETA	ELVATR	AILRON
(A3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(A3250A)		MSFC490 GD DELTA BOOSTER B20	0.000		

MACH 1.090

REFERENCE INFORMATION

SREF	19.6500	SQ IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



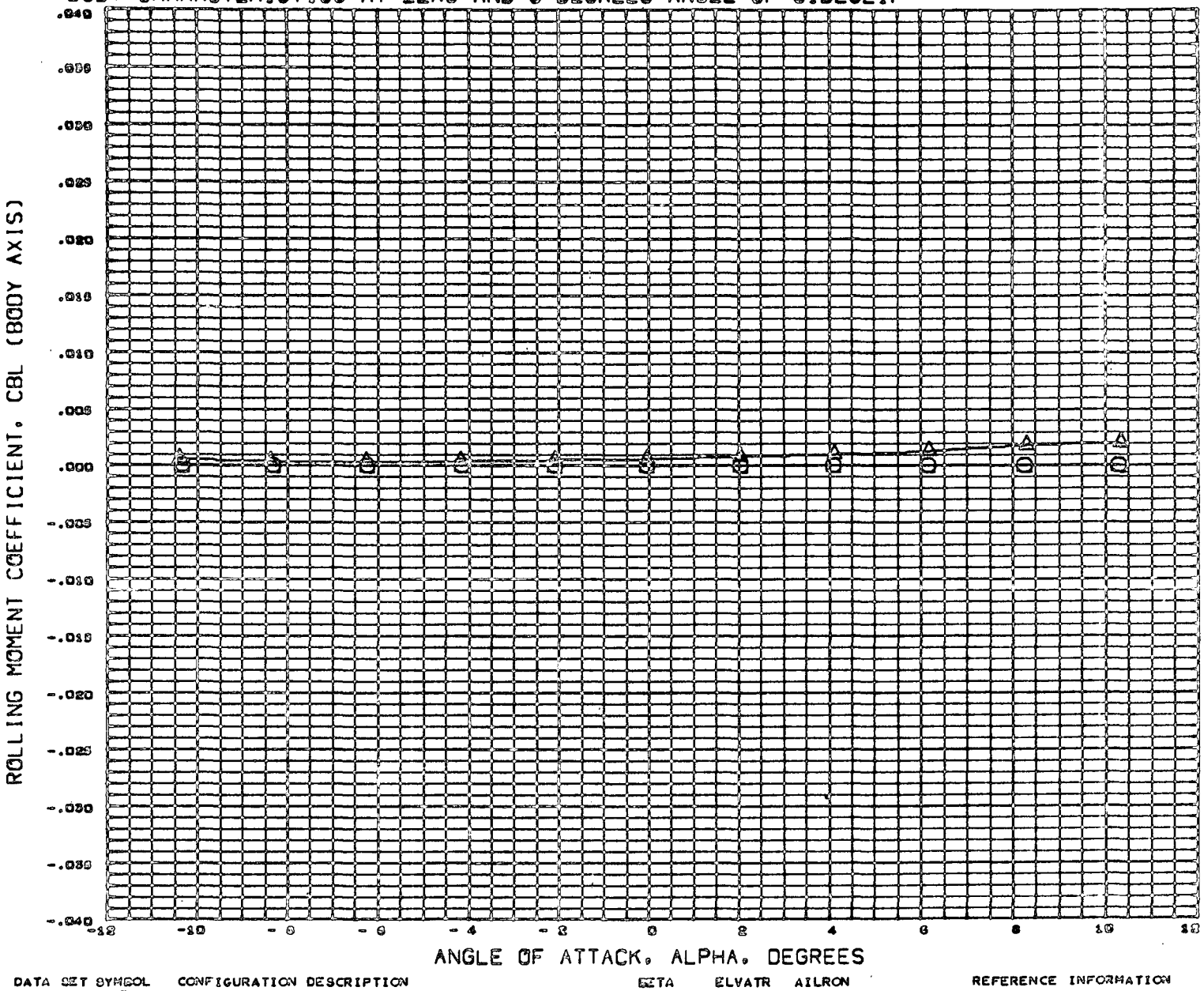
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(A3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.473

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



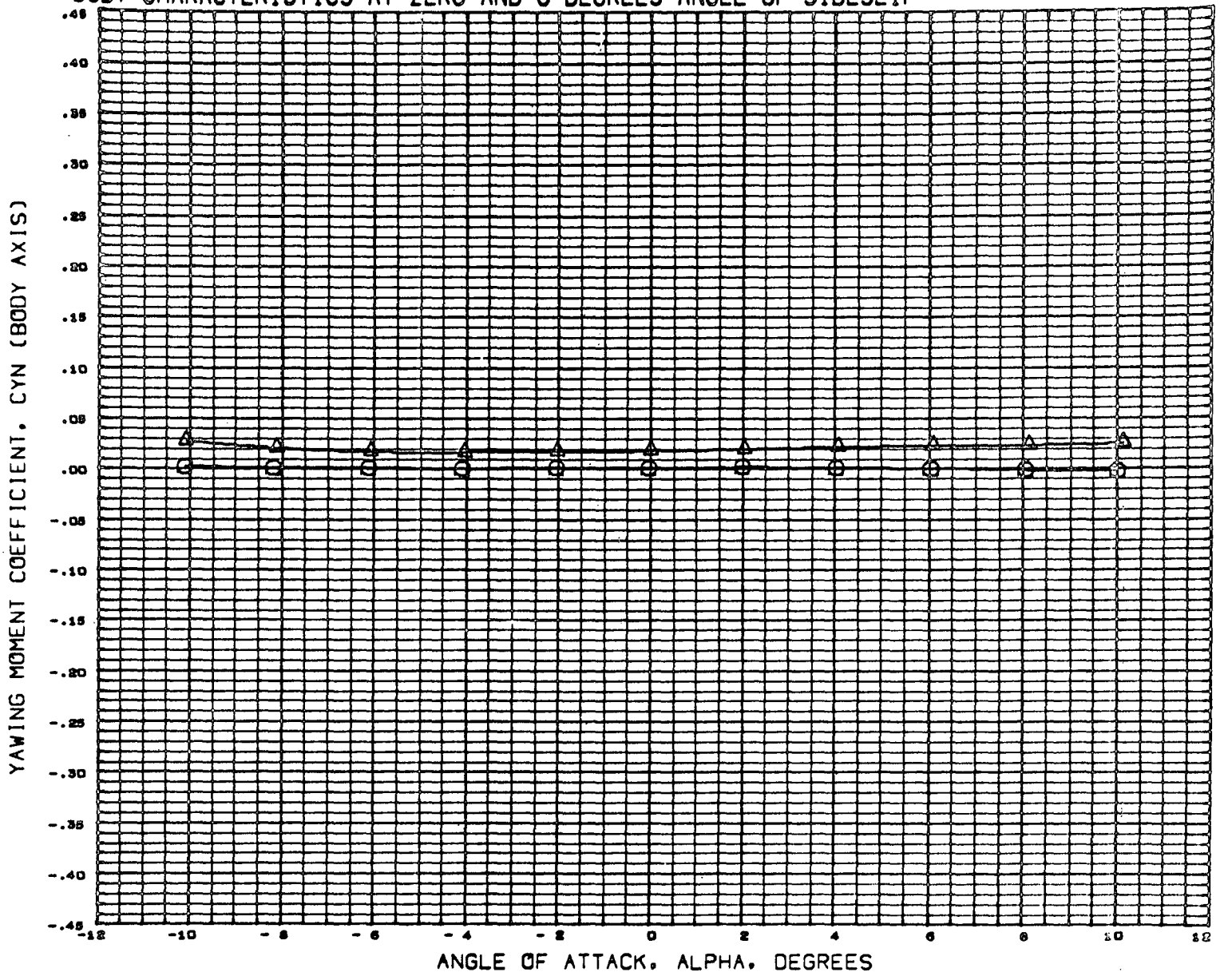
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(A3250A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.059

REFERENCE INFORMATION

SREF	15.6960	80 IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



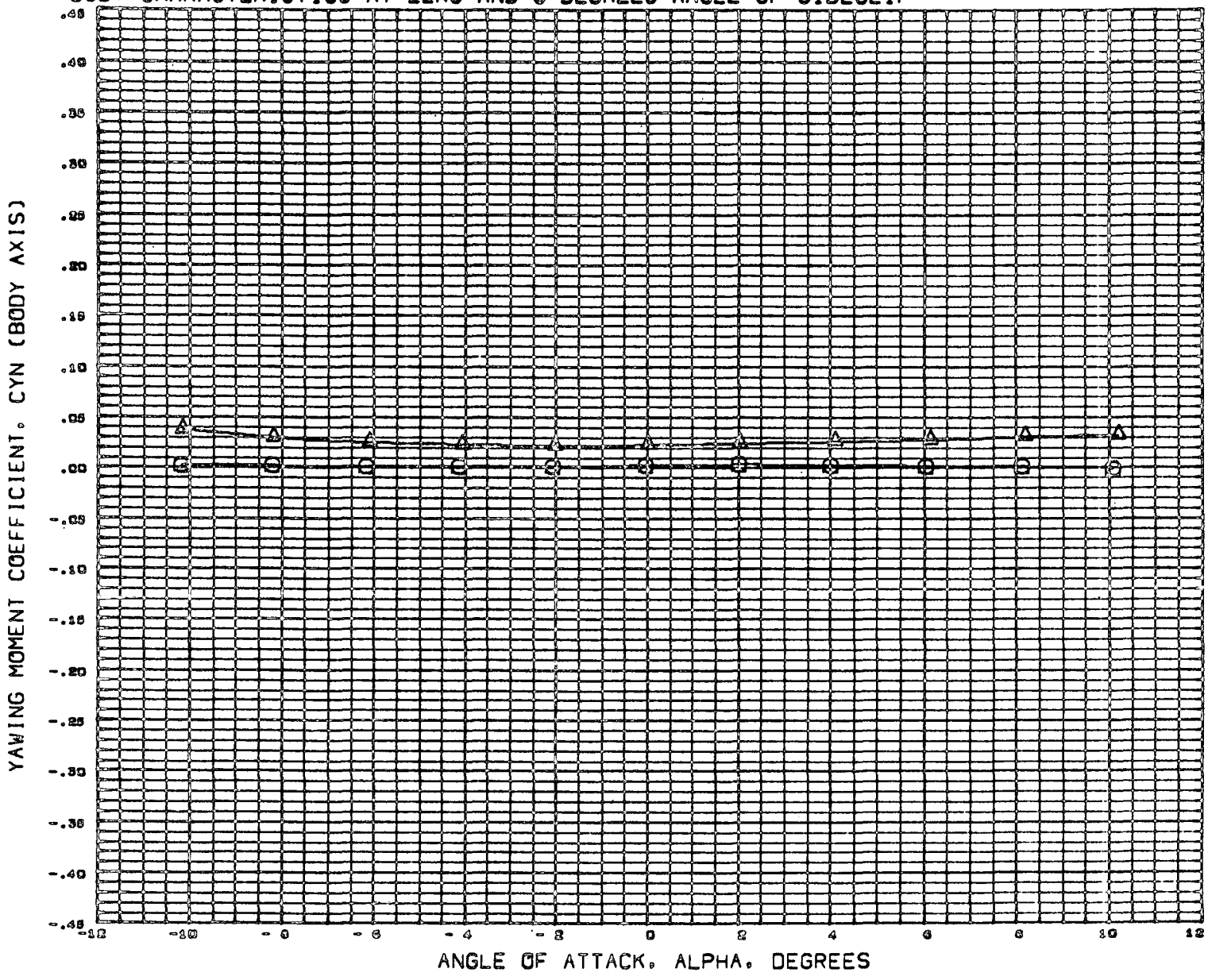
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(A3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.600

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0980	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



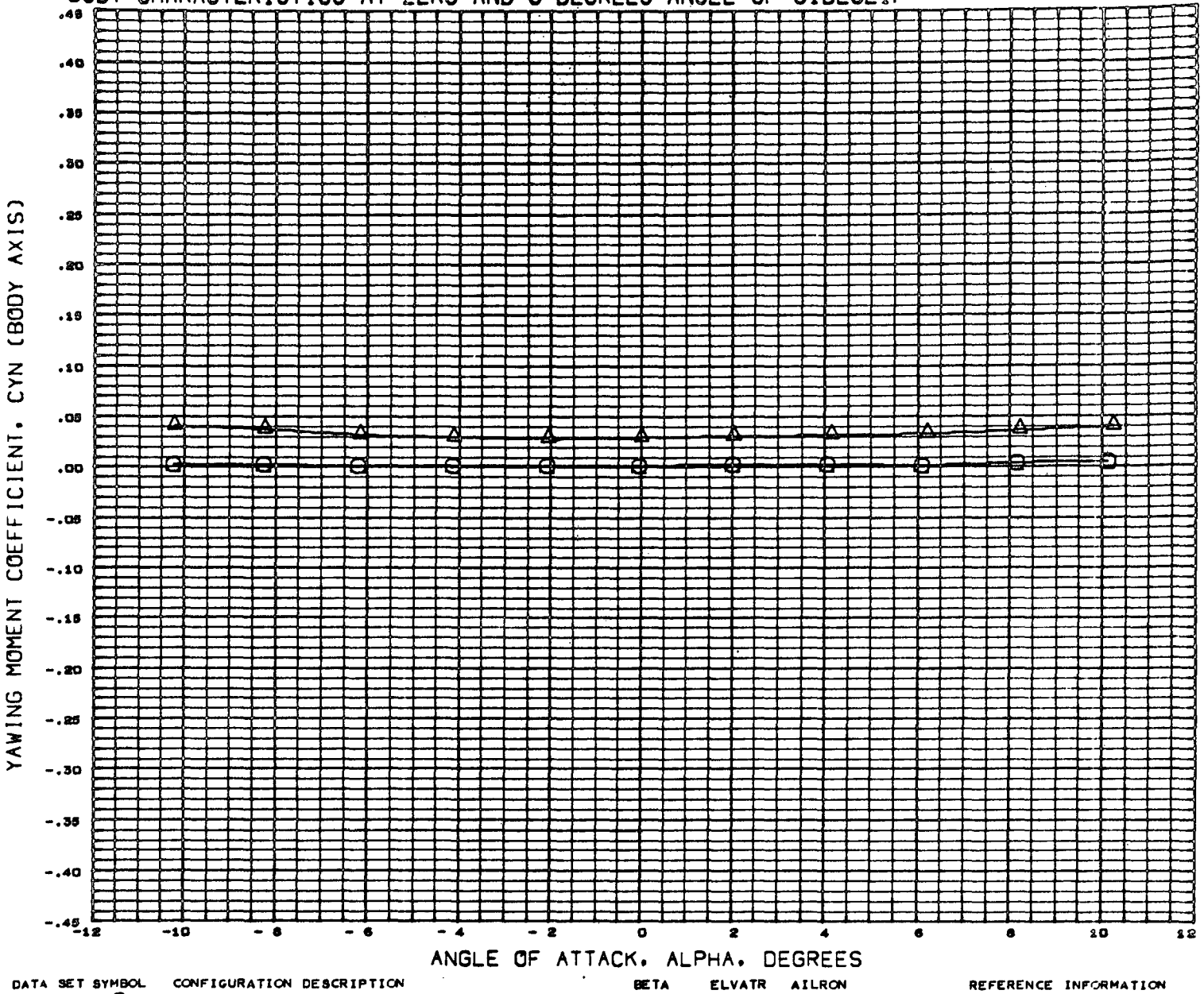
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(A3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 0.800

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP



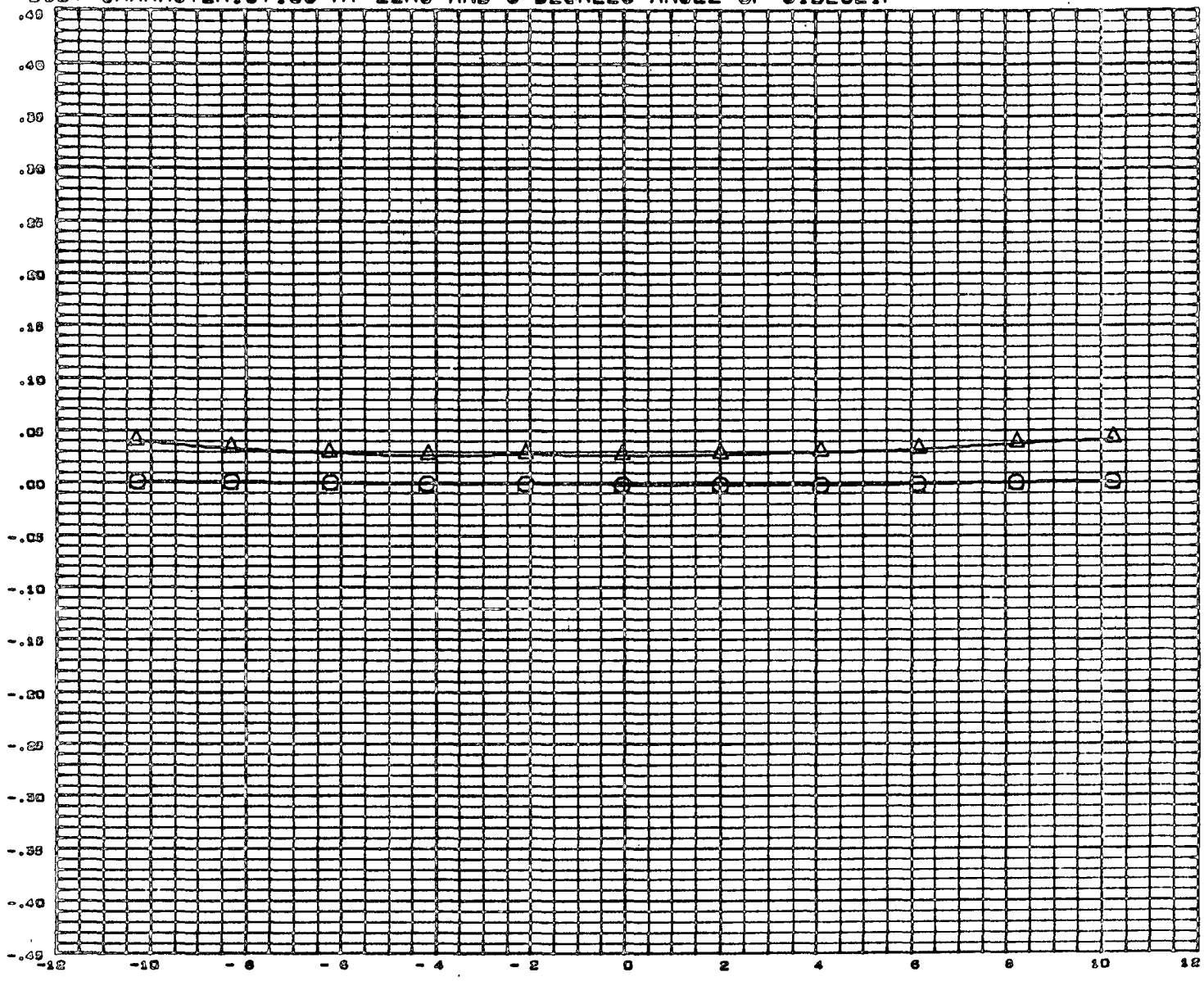
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(A3258A)	△	MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.098

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

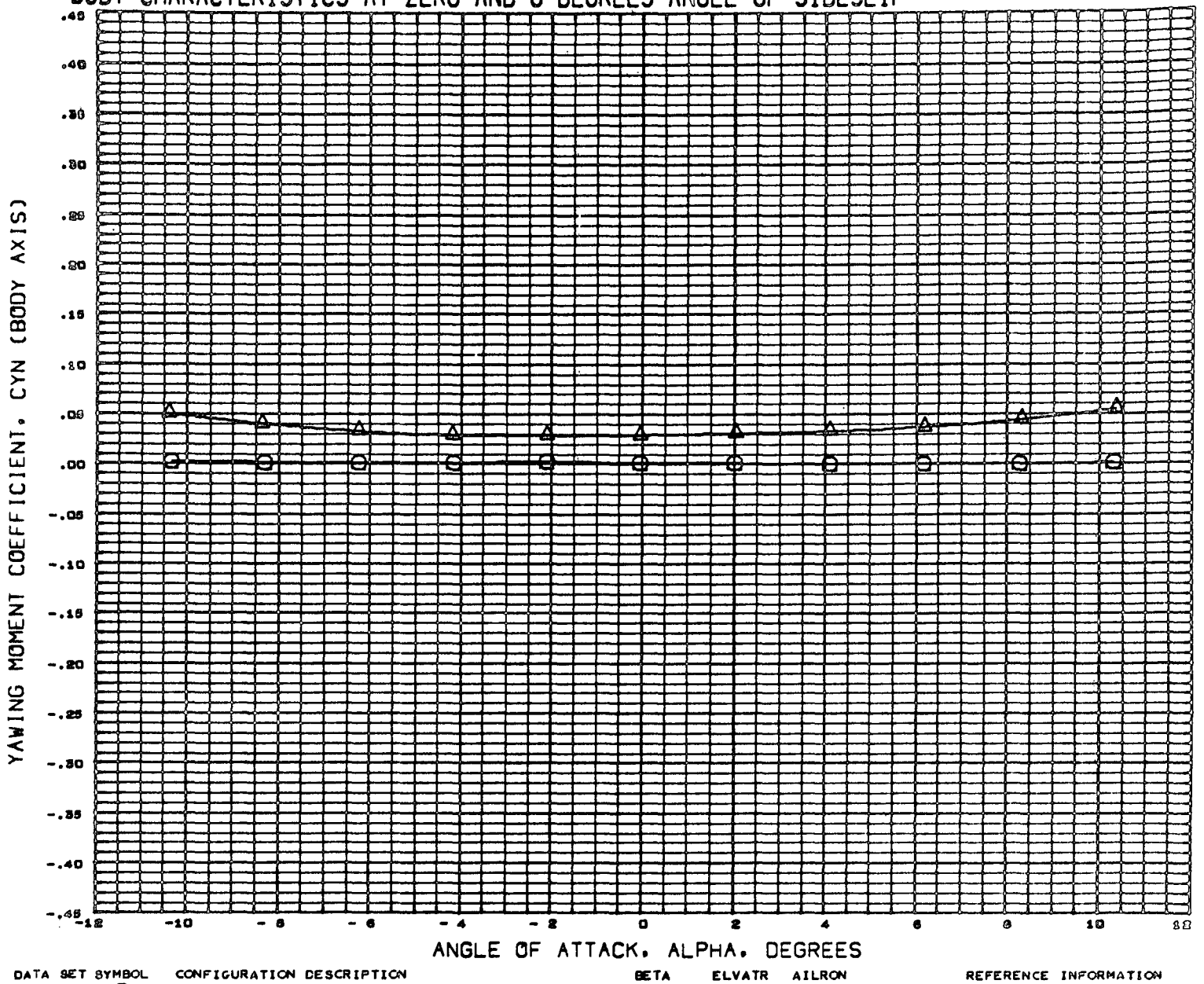


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A9201A)		NSFC490 GD DELTA BOOSTER B20	0.000		
(A9290A)		NSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.473

REFERENCE INFORMATION		
SREF	15.656C	SQ IN
LREF	3.095C	INCHES
BREF	6.099C	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BODY CHARACTERISTICS AT ZERO AND 6 DEGREES ANGLE OF SIDESLIP

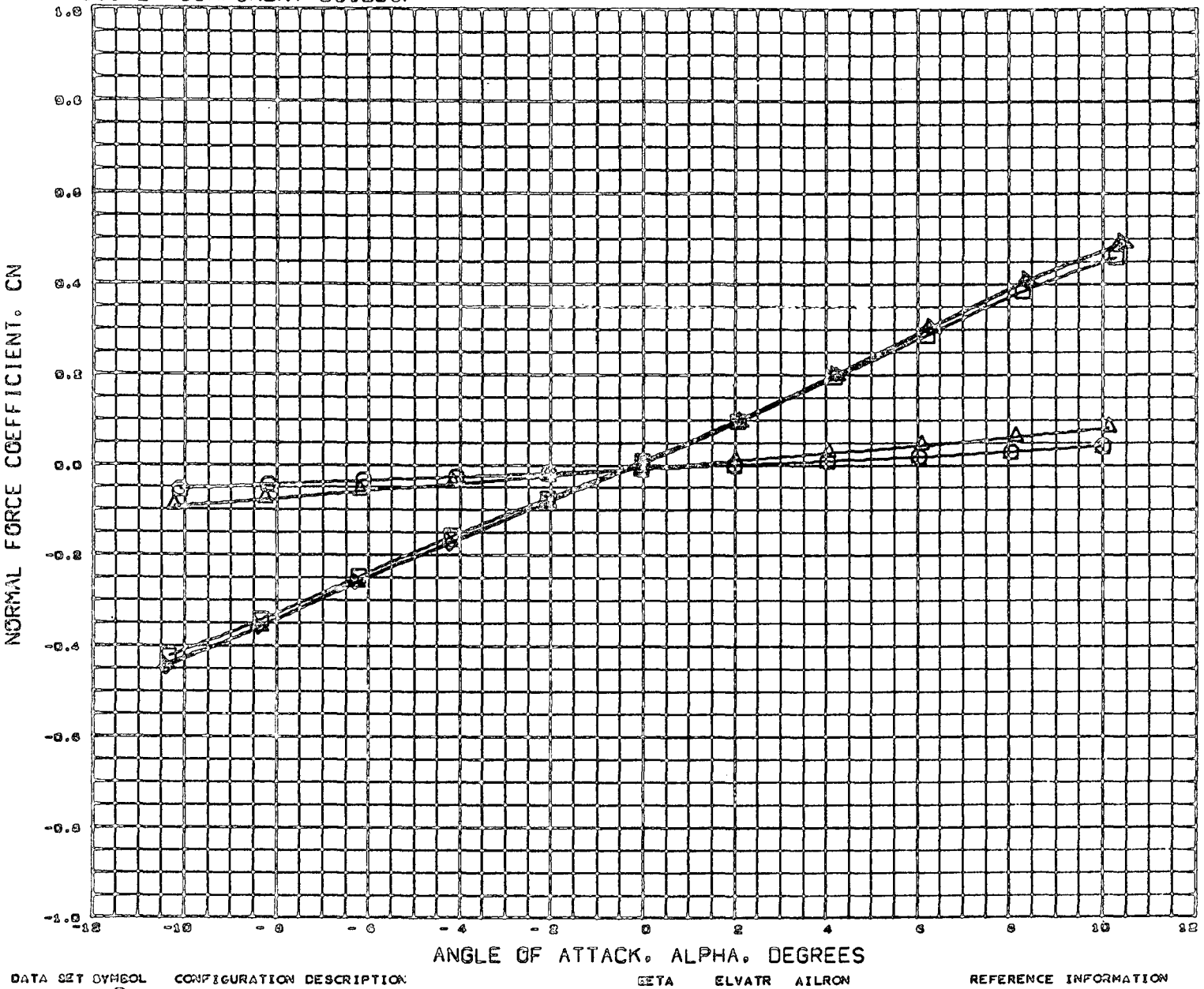


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(A3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(A3258A)		MSFC490 GD DELTA BOOSTER B20	6.000		

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER COMPONENT BUILDUP

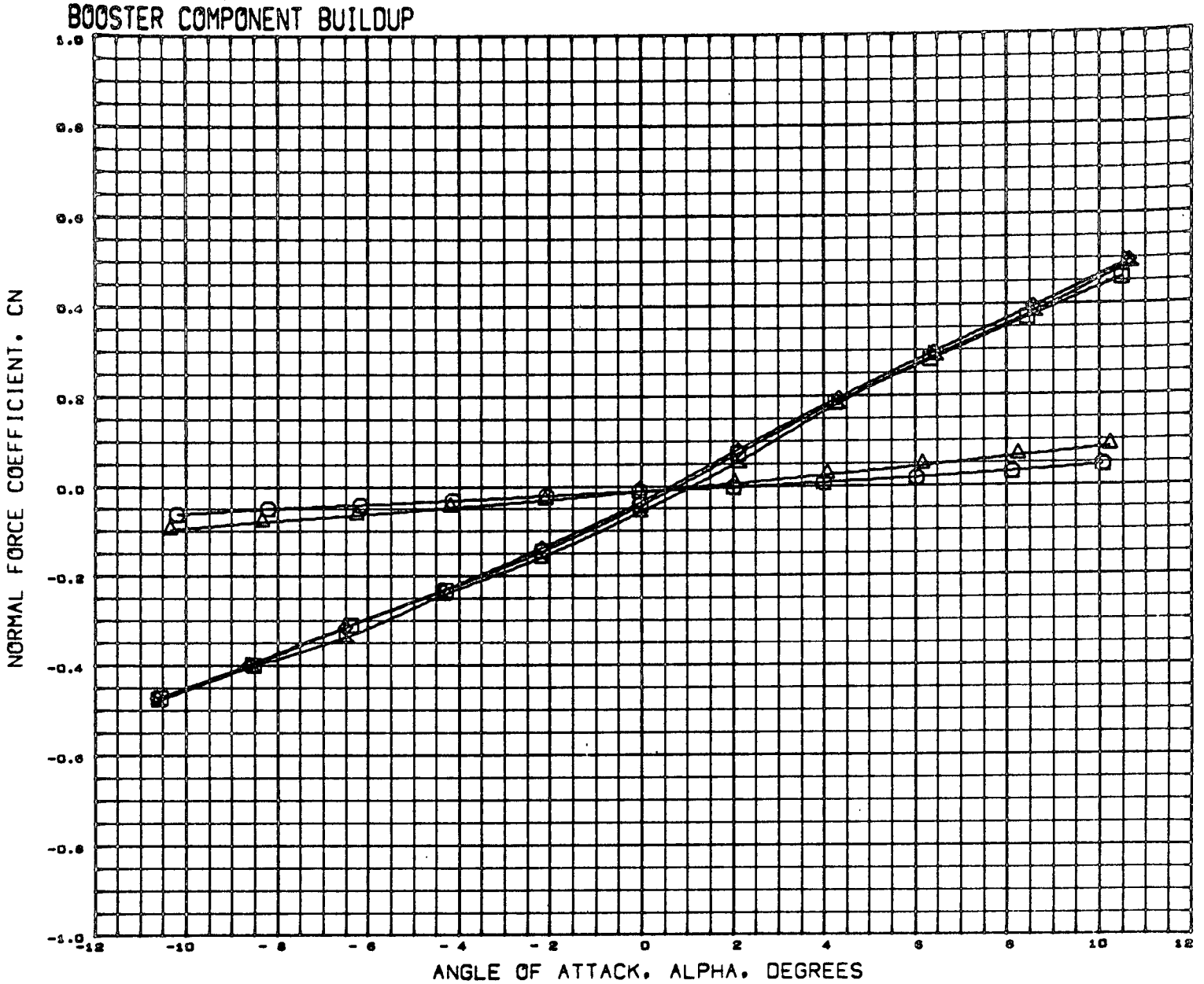


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(M3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.000

REFERENCE INFORMATION		
SREF	19.6960	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP



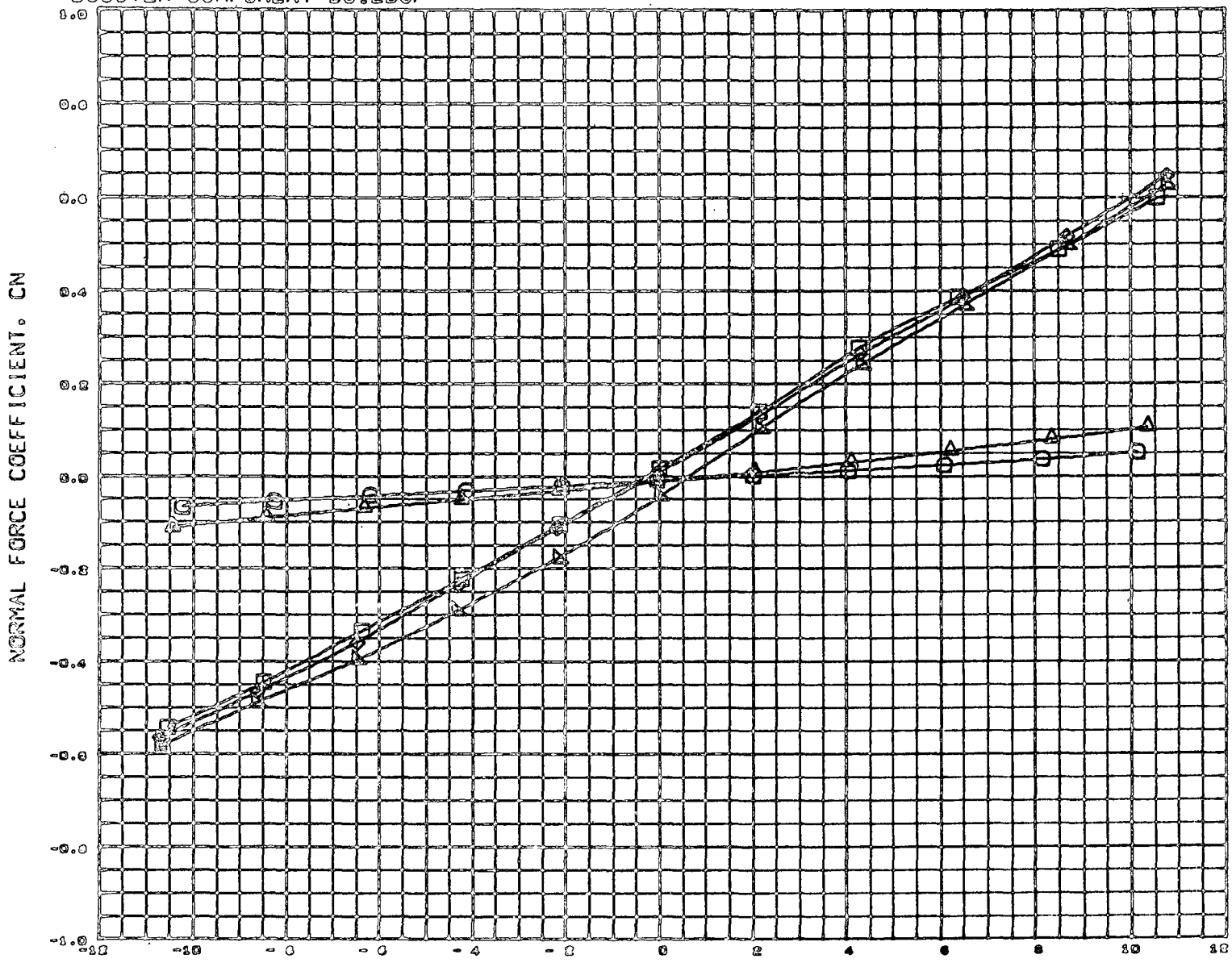
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.696

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M5201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M5202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I5203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(M5204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I5205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.000

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0930	INCHES
BREF	6.0990	INCHES
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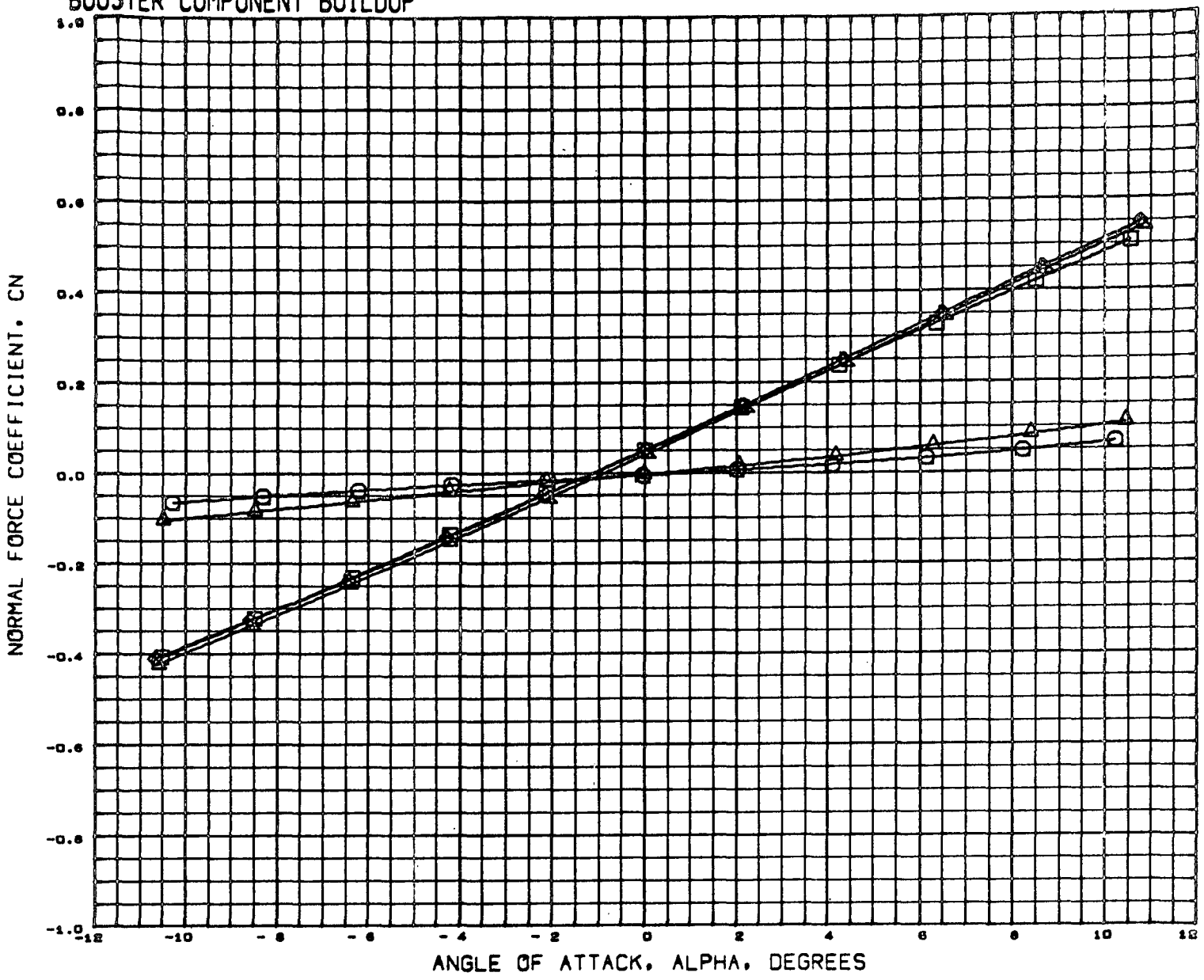
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER COMPONENT BUILDUP



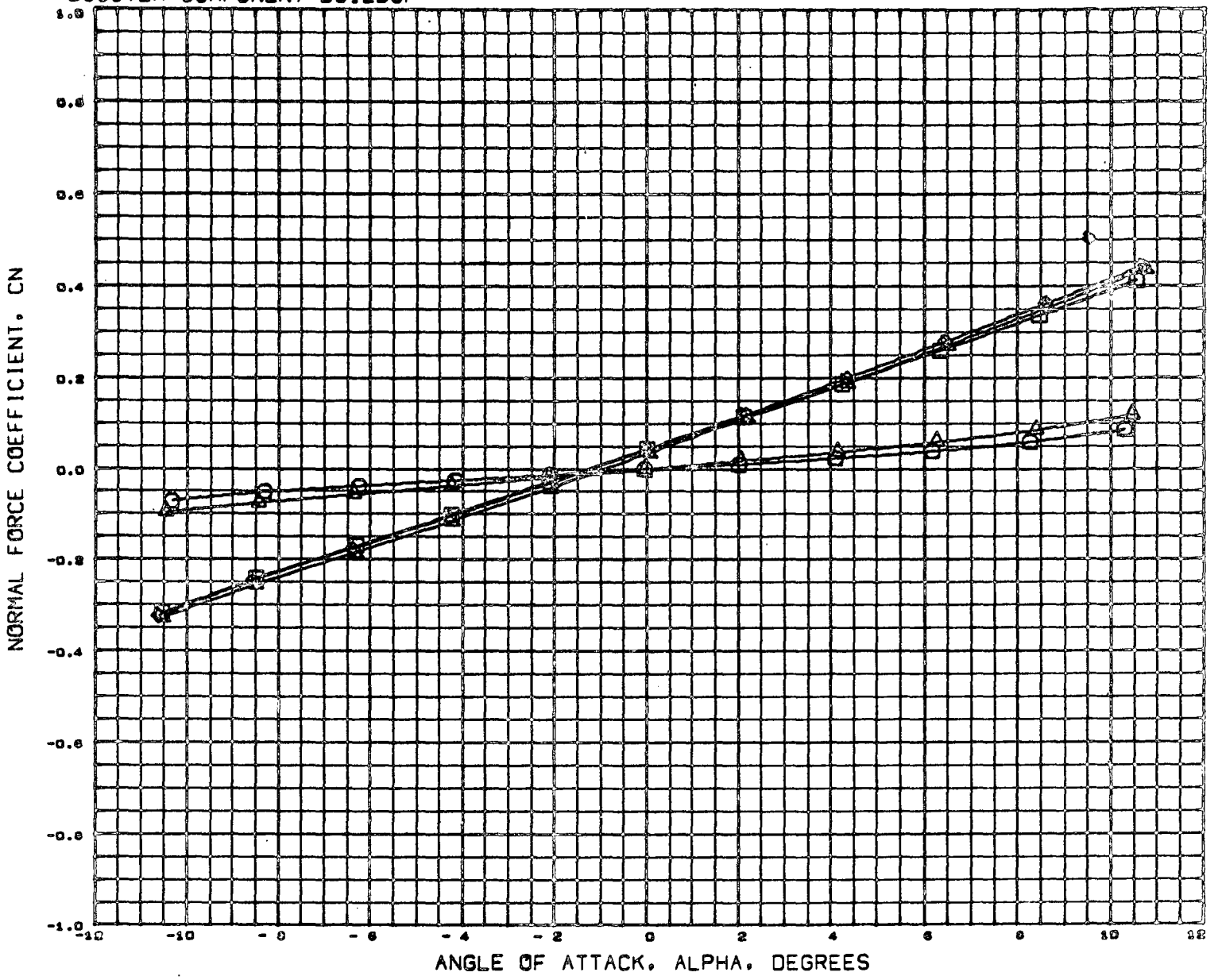
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.473

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER COMPONENT BUILDUP

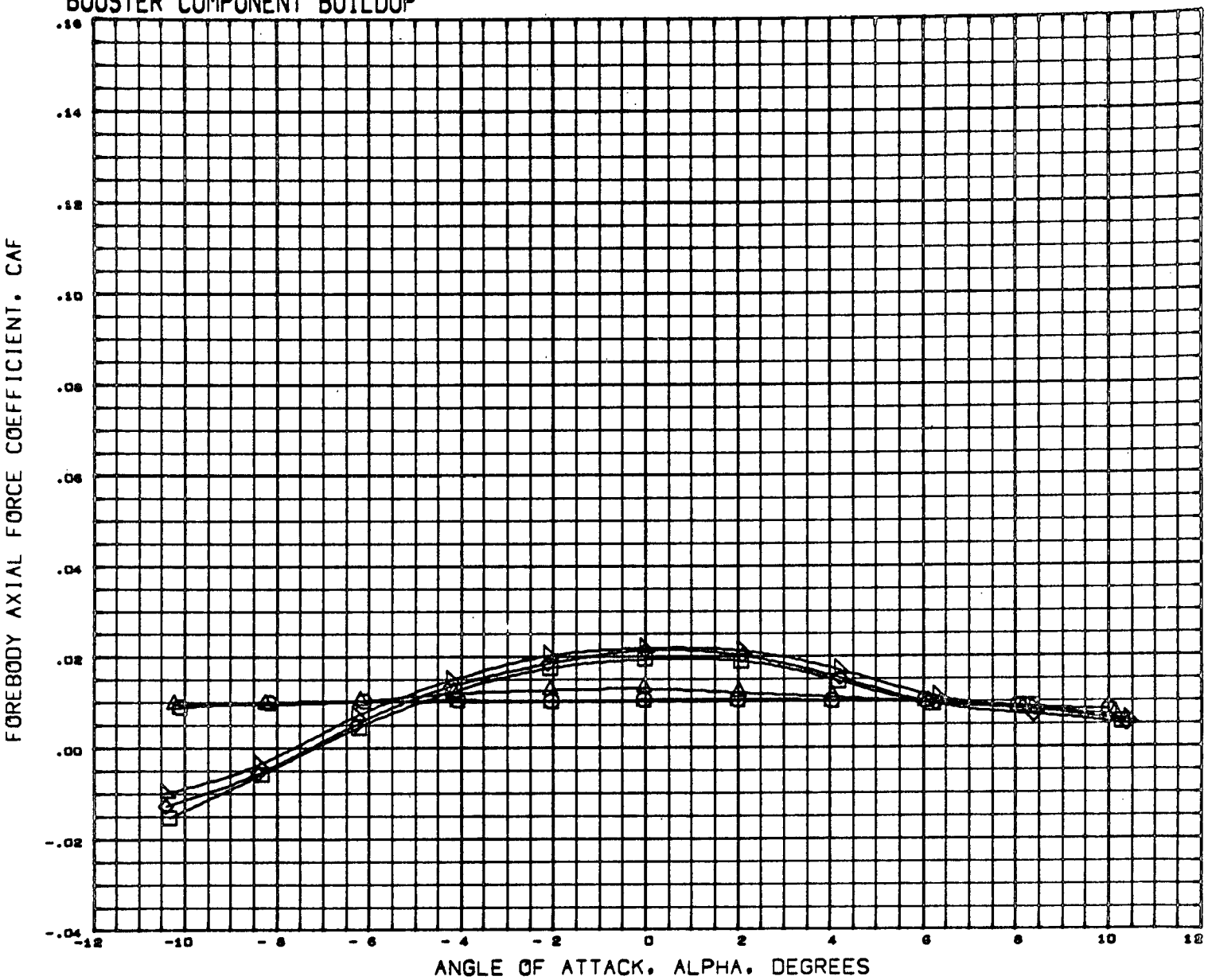


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(M3202A)	△	MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(M3204A)	□	MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)	▽	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER COMPONENT BUILDUP

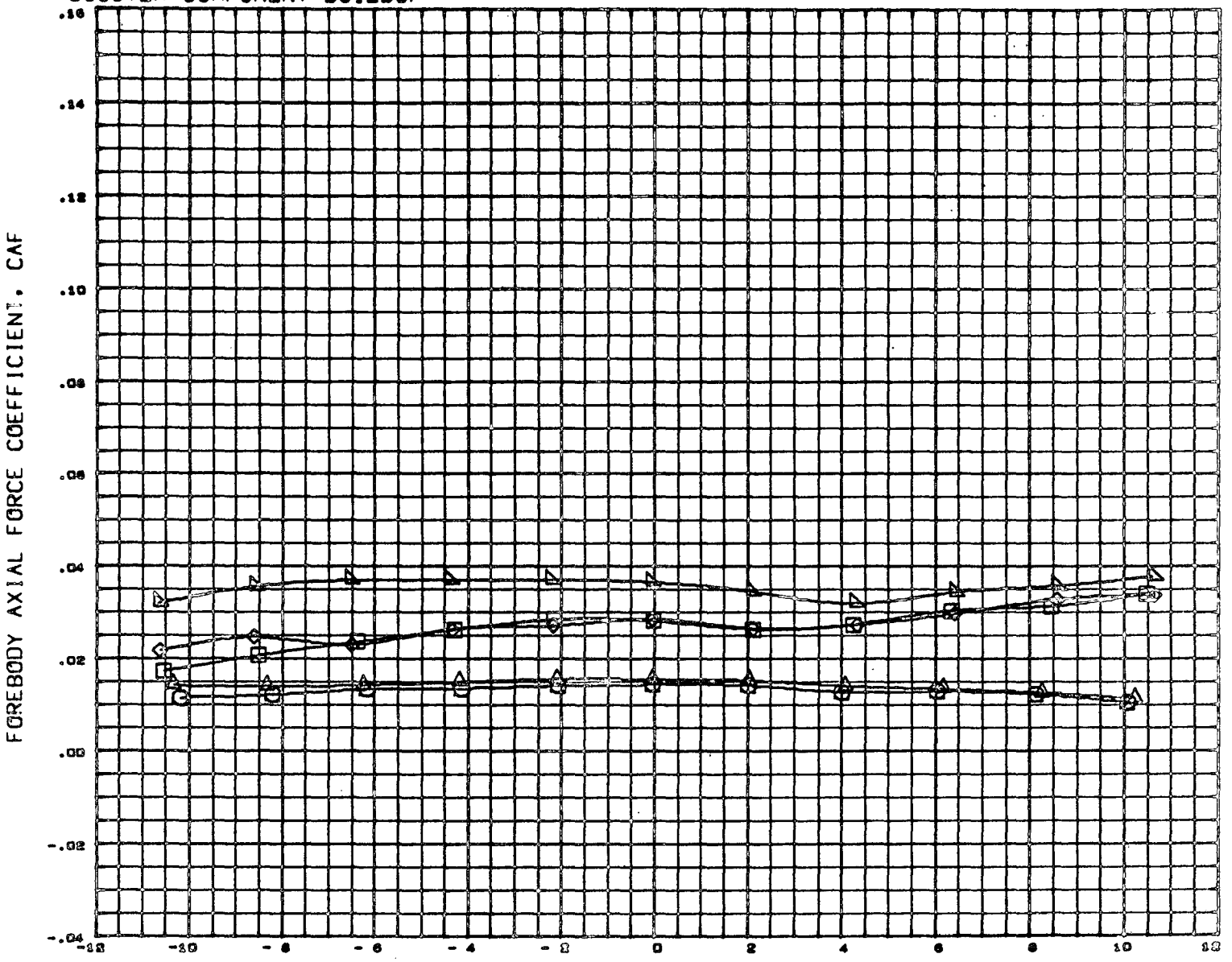


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0990	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP

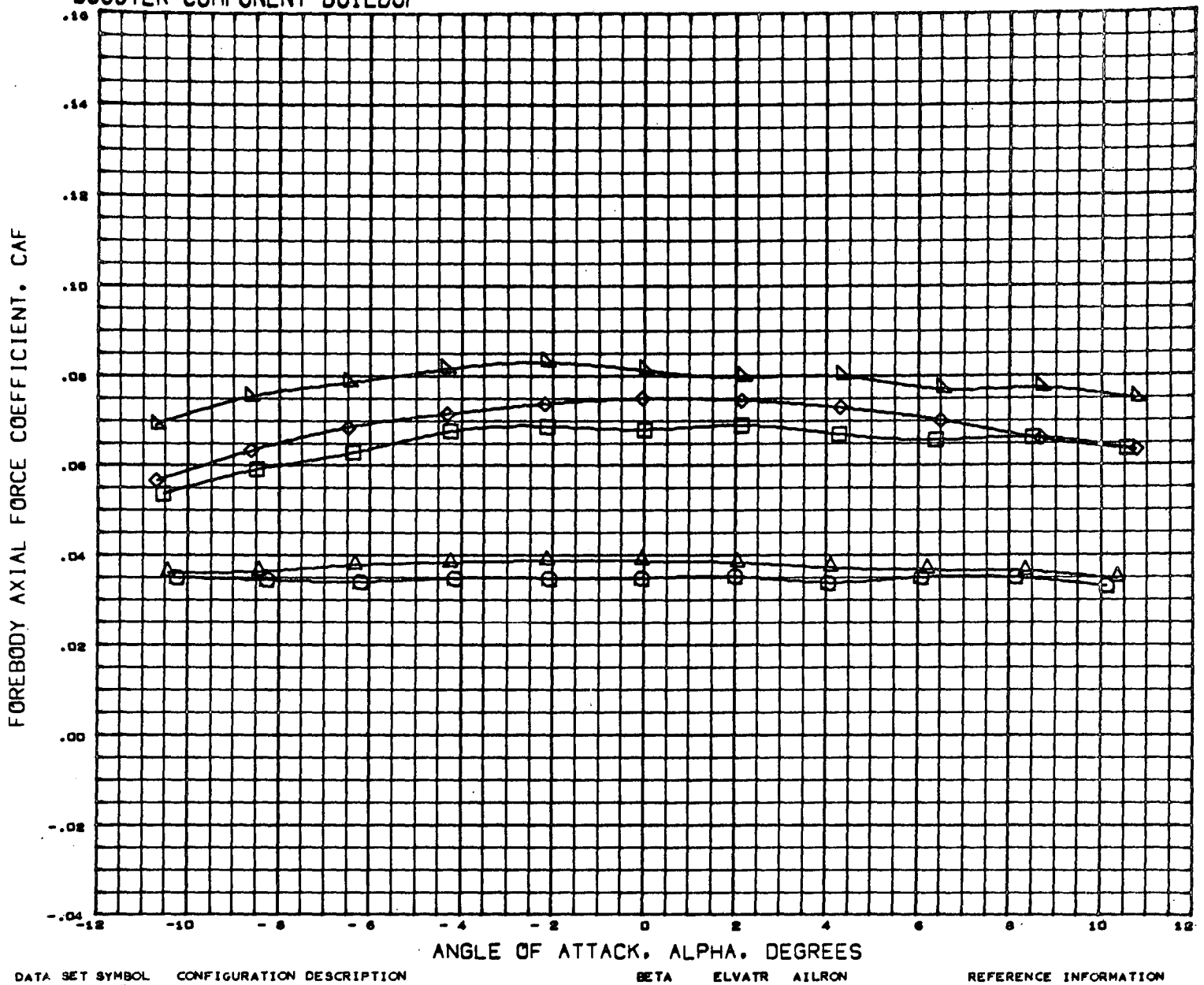


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(M3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.696

REFERENCE INFORMATION		
SREF	15.6560	90 IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER COMPONENT BUILDUP

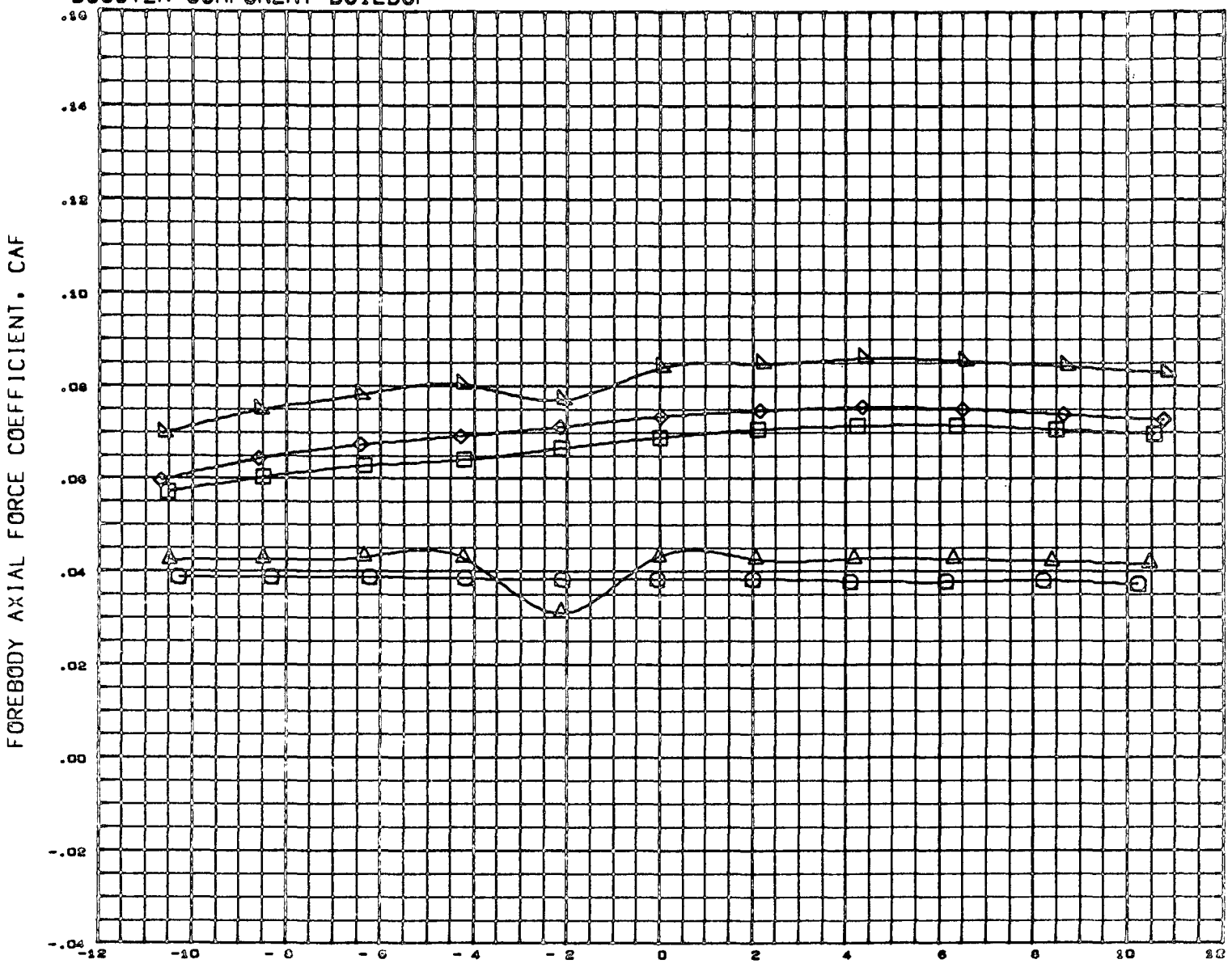


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)	△	MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)	□	MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)	▽	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.098

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP

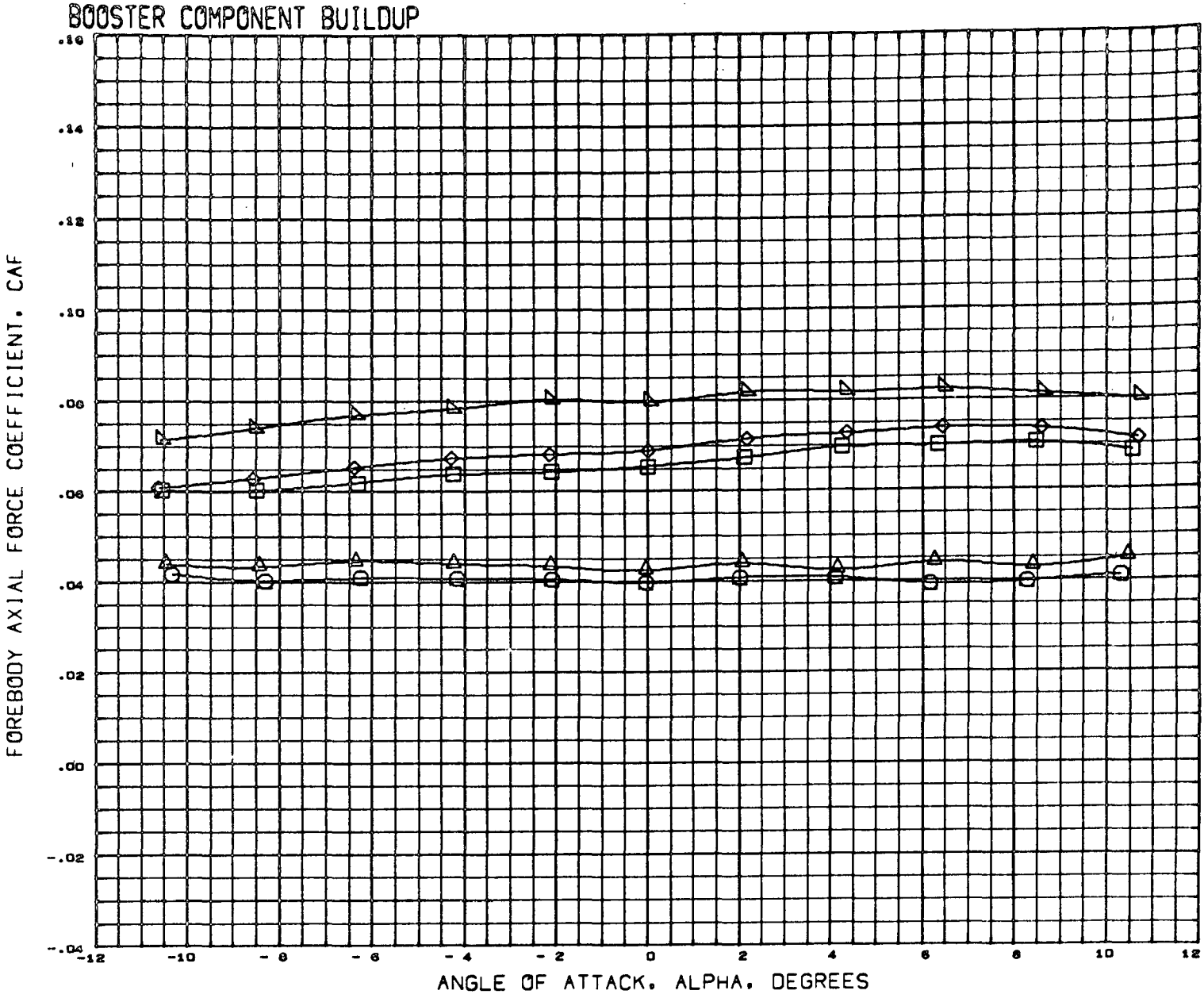


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(M3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.473

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP

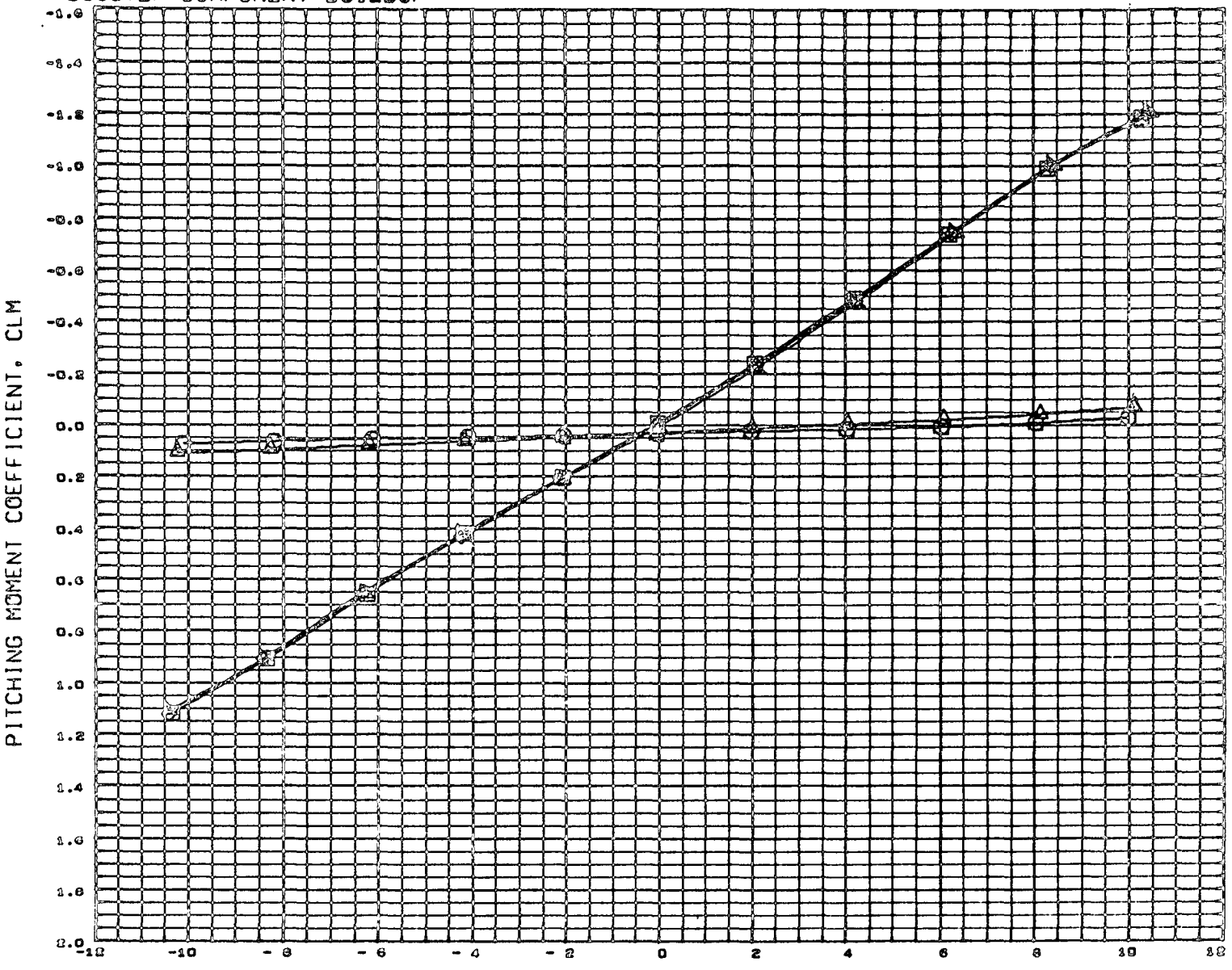


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(M3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3209A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6960	00 IN
LREF	5.0950	INCHES
BREF	6.0990	INCHES
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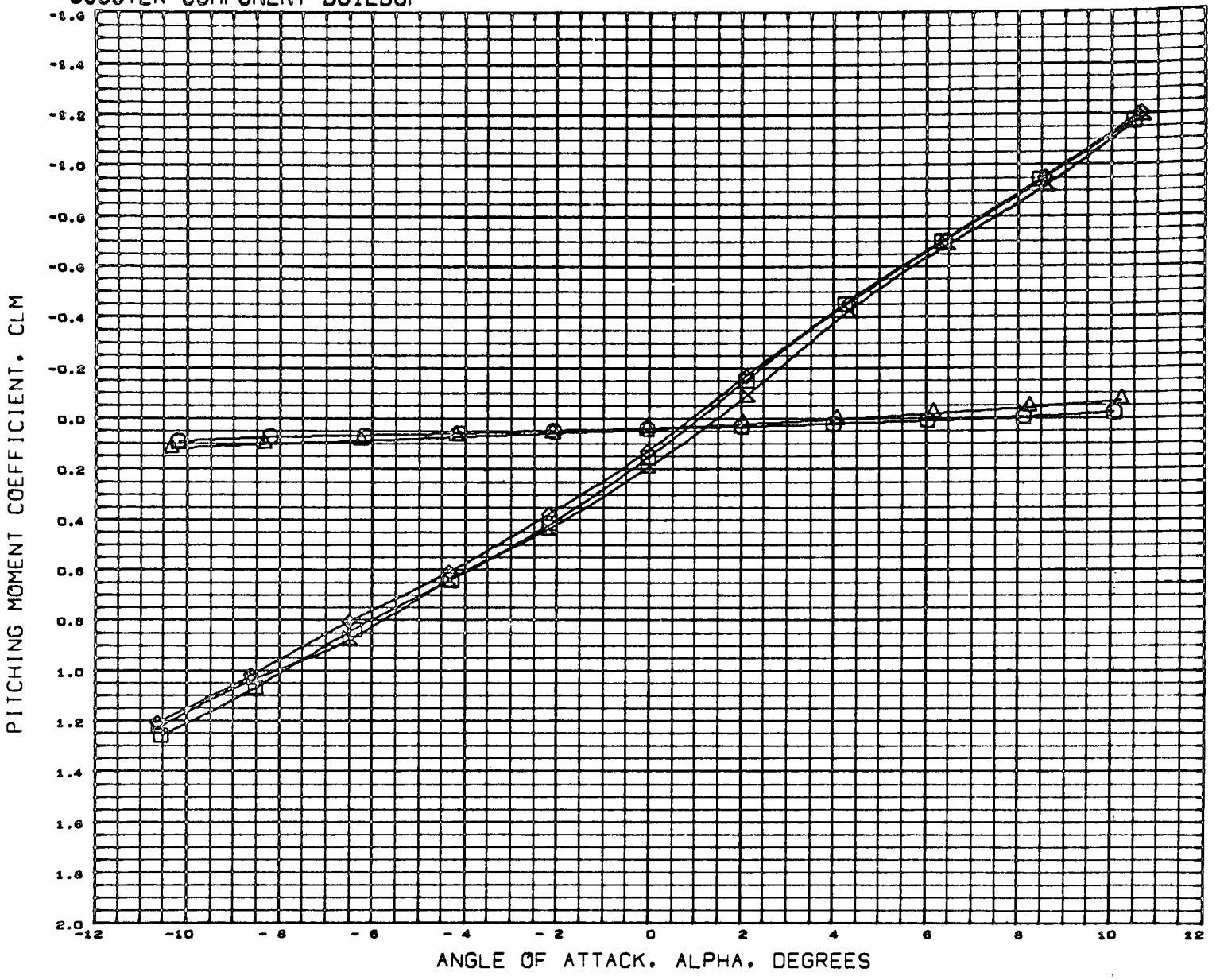
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP

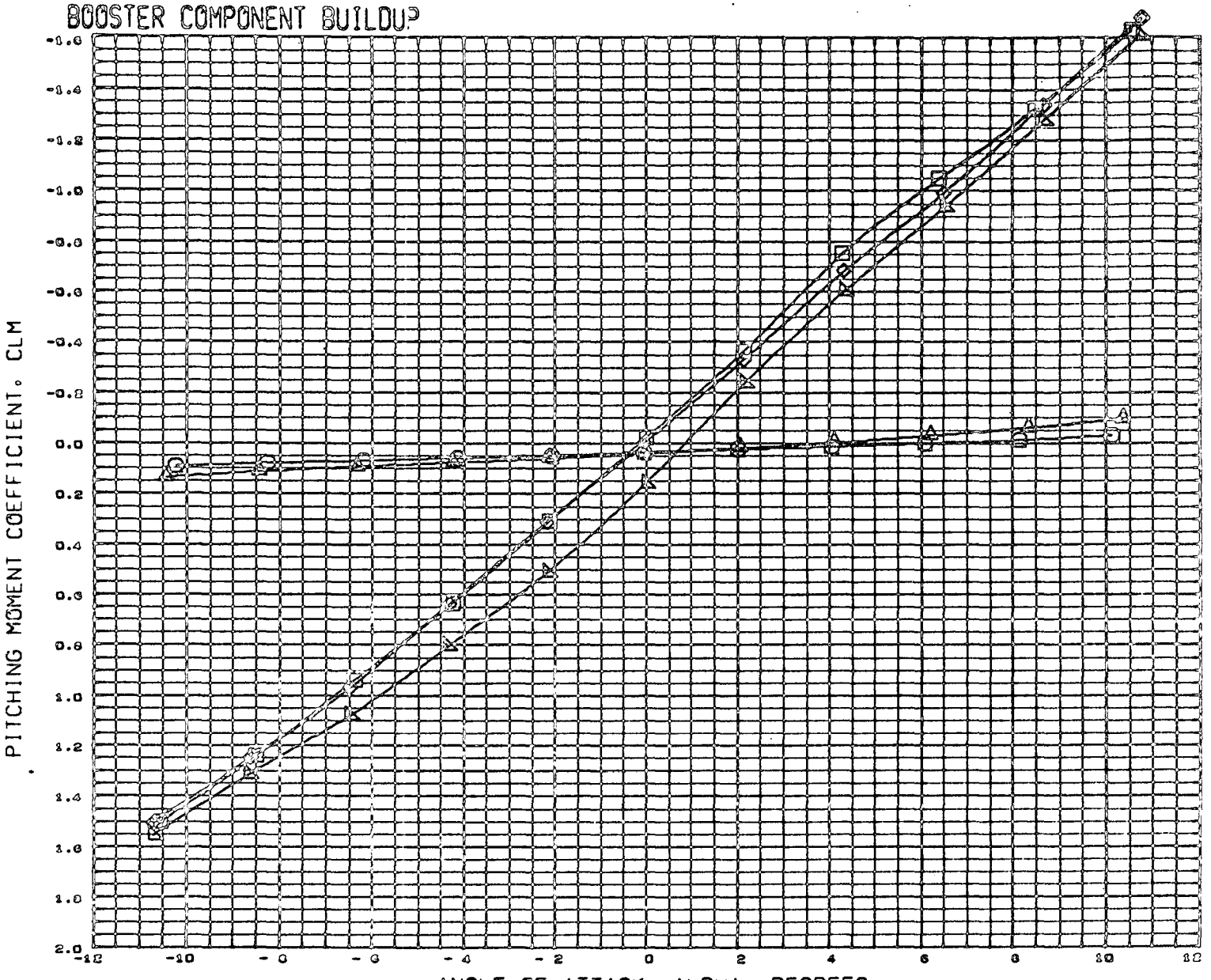


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.896

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(M3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.090

REFERENCE INFORMATION		
SREF	15.6930	SQ IN
LREF	3.0930	INCHES
BREF	6.0990	INCHES
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YMRP	0.0000	
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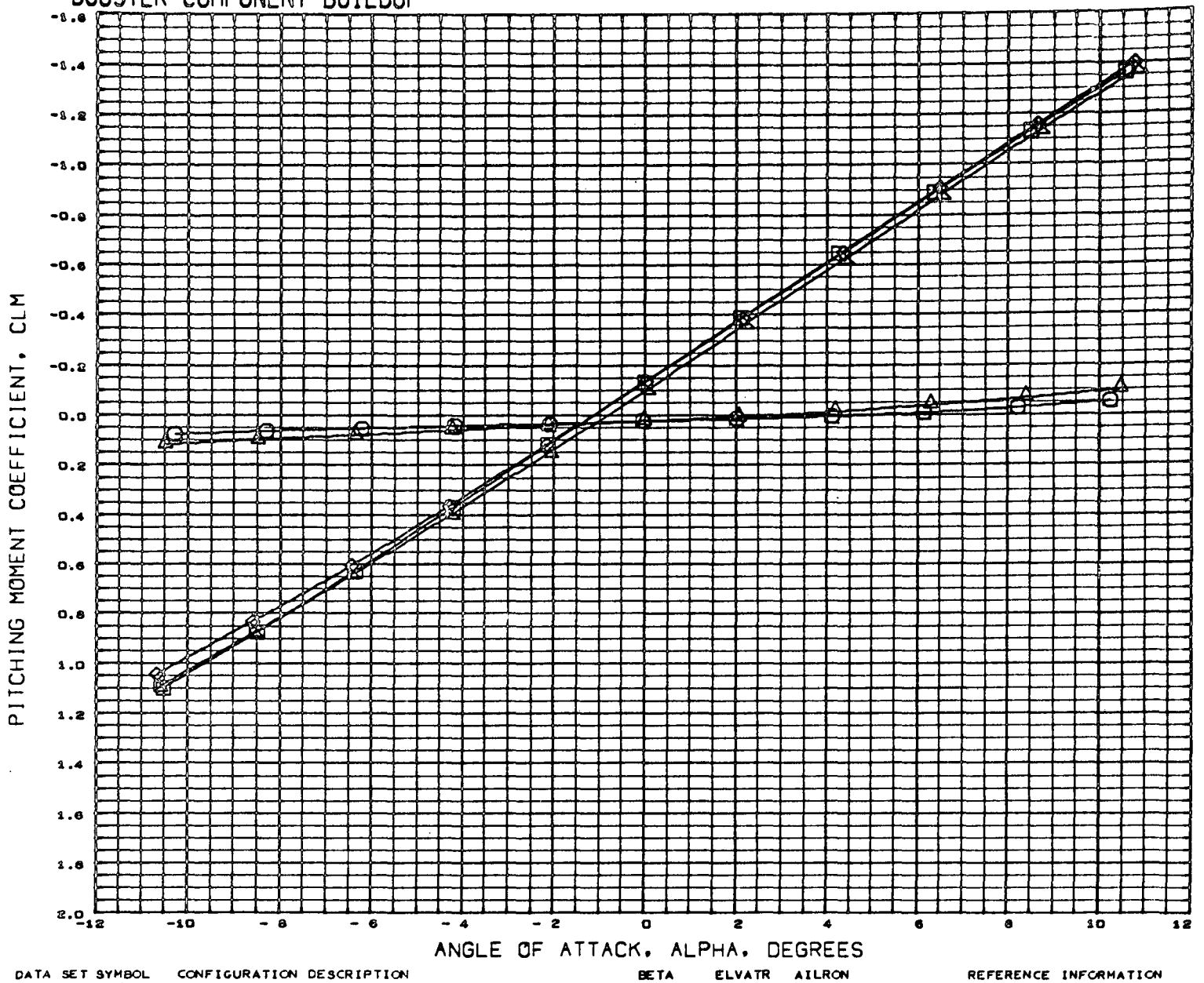
SCALE	0.0039	SCALE

BOOSTER COMPONENT BUILDUP

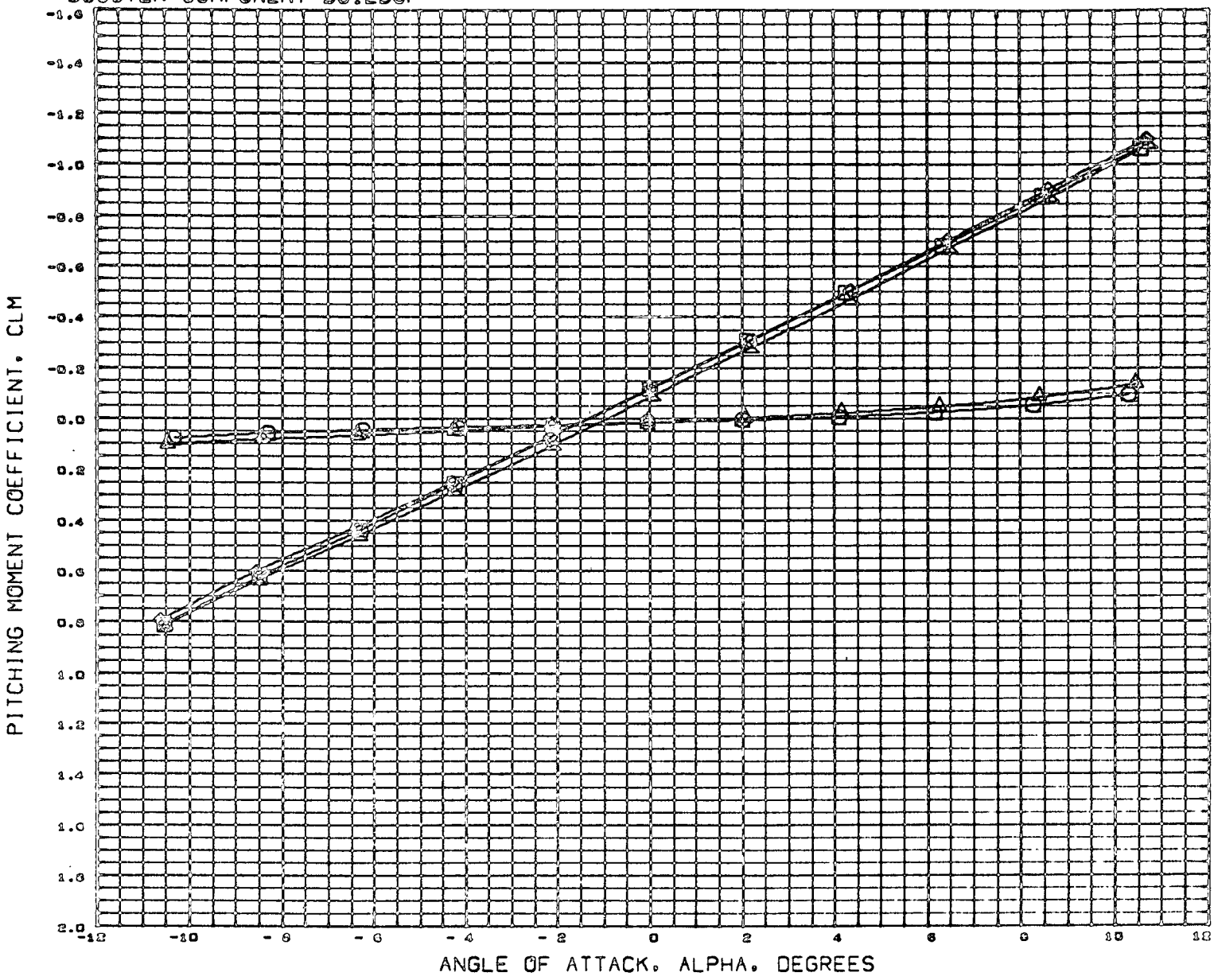


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.473

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
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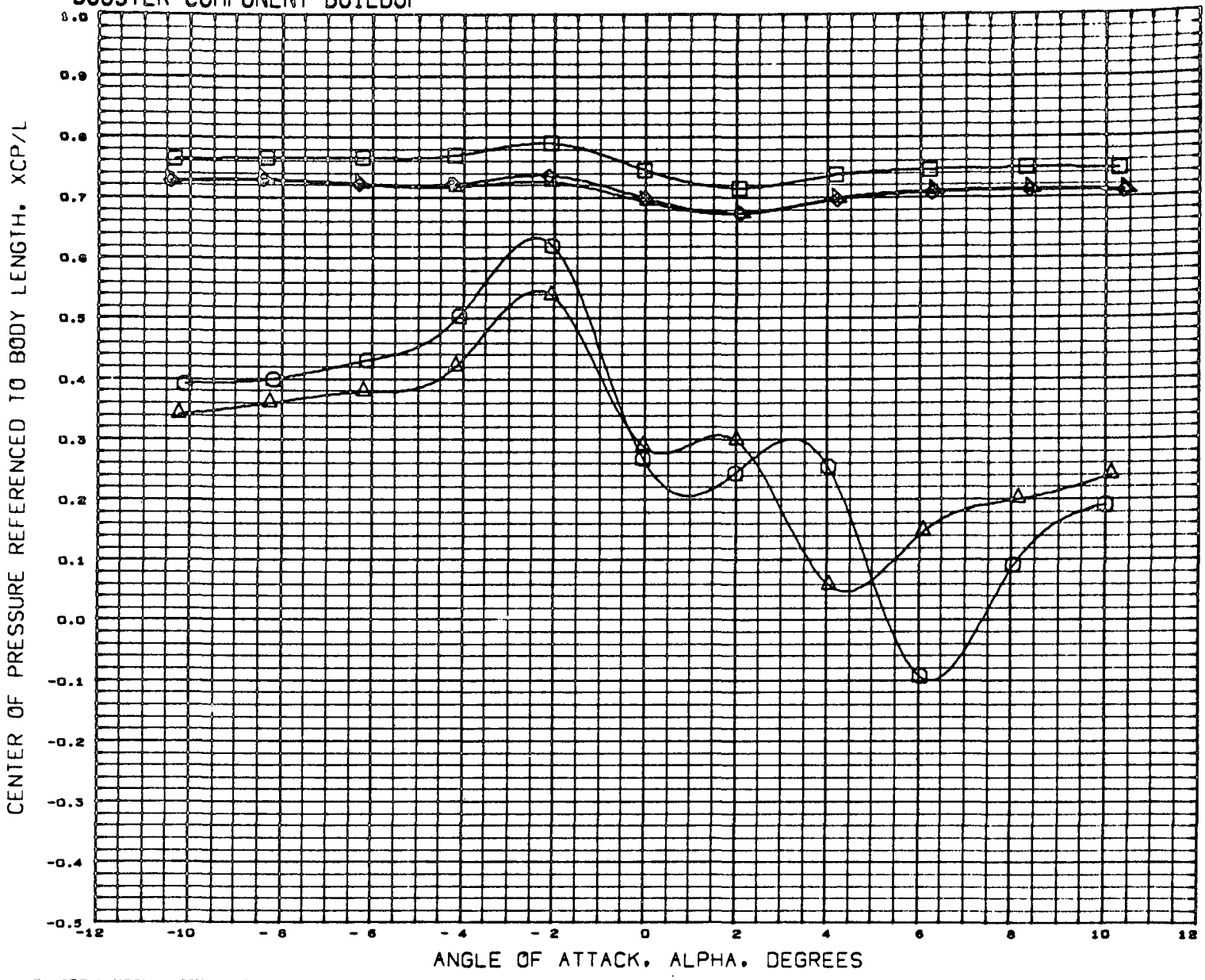
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP

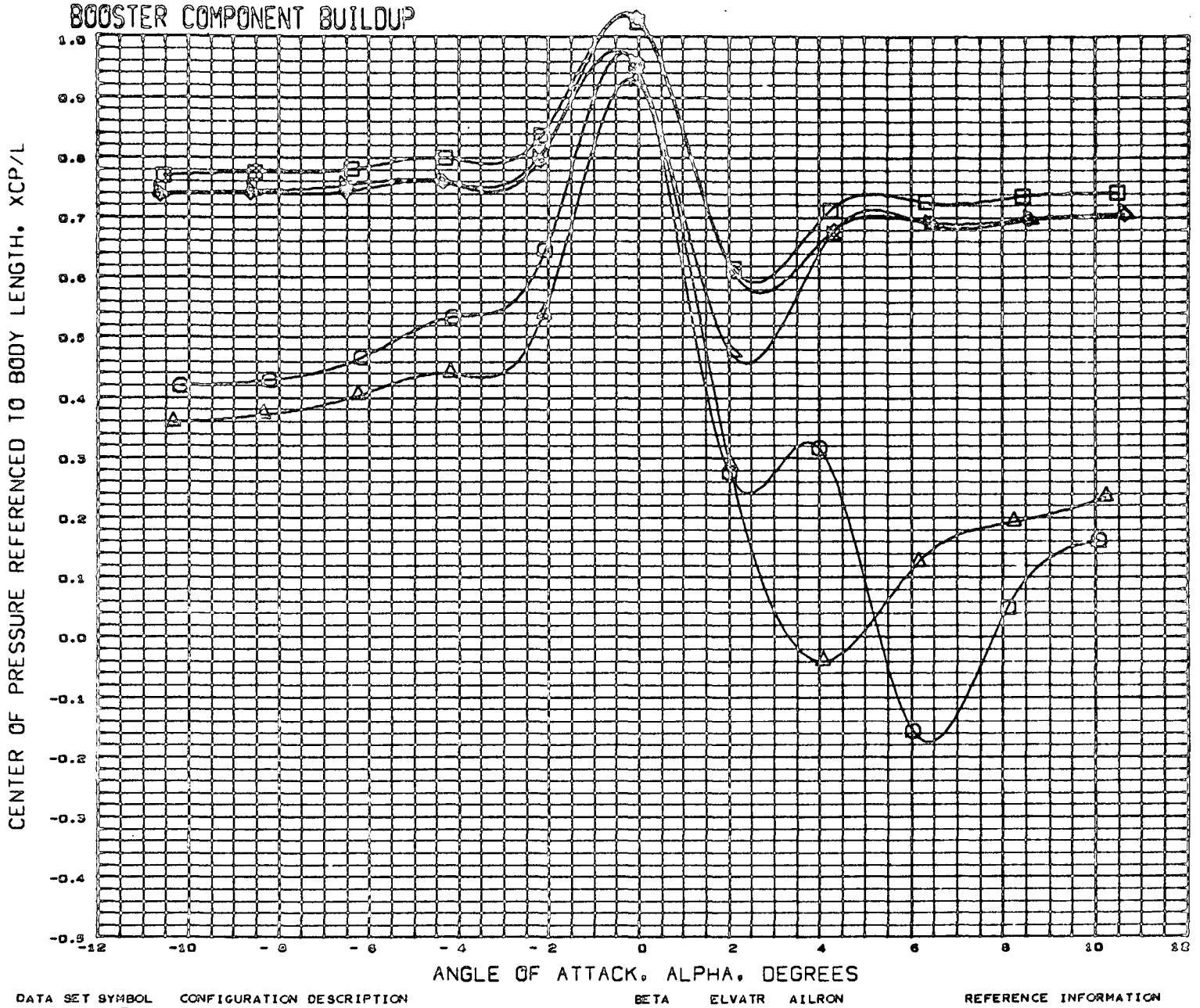


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP

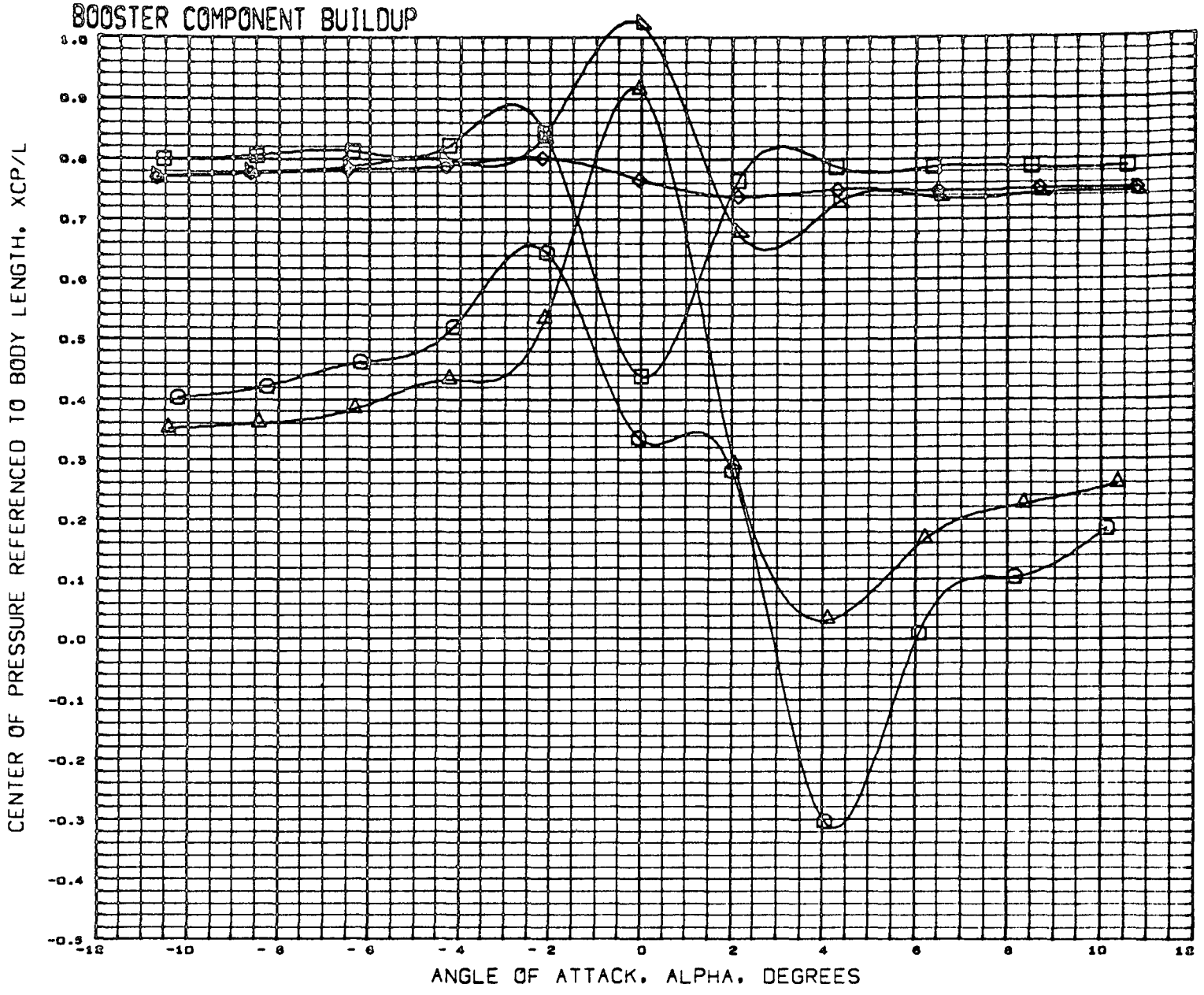


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		M3FC490 GD DELTA BOOSTER B20	0.000		
(M3202A)		M3FC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		M3FC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(M3204A)		M3FC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		M3FC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.096

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER COMPONENT BUILDUP



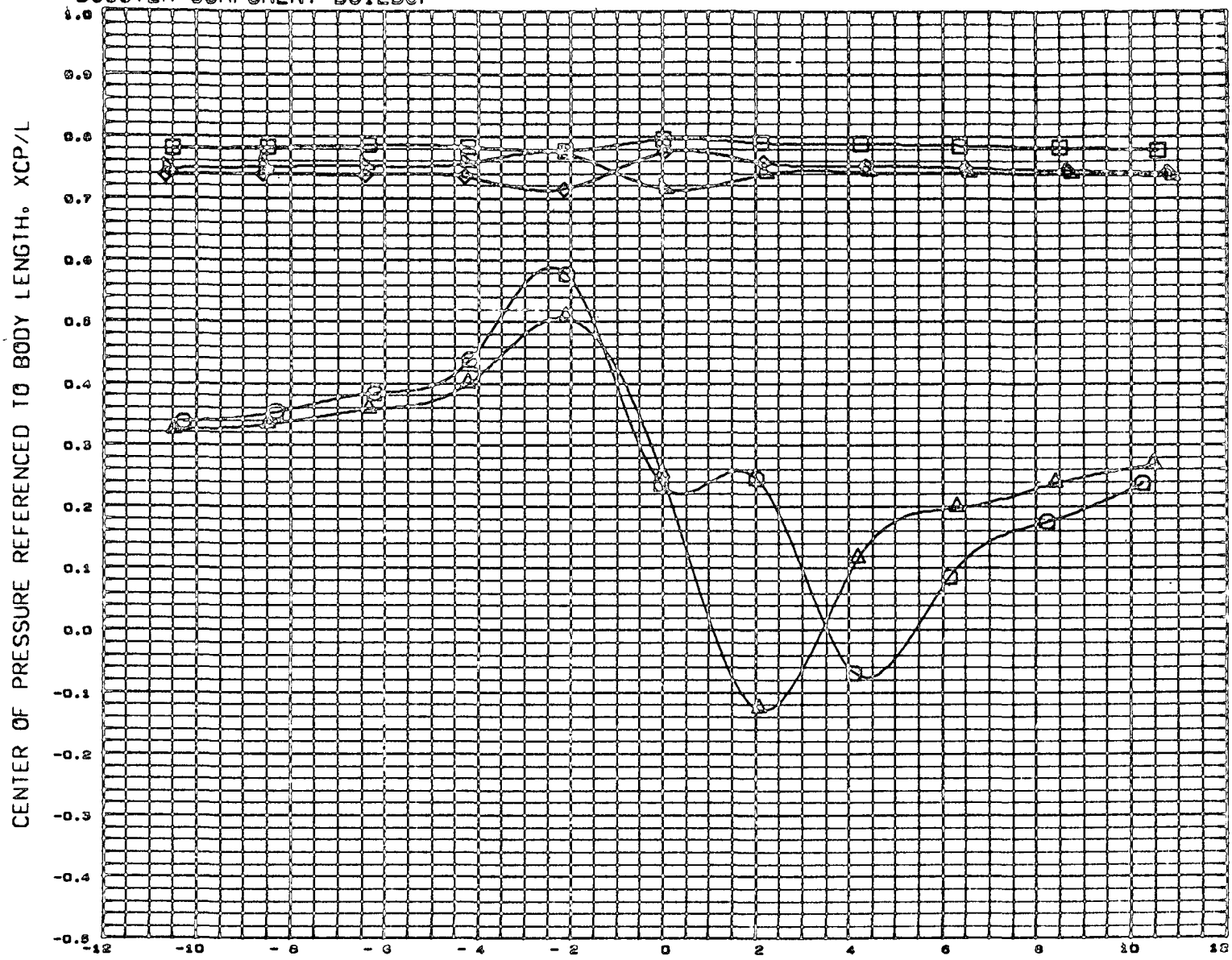
DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.098

REFERENCE INFORMATION

SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP

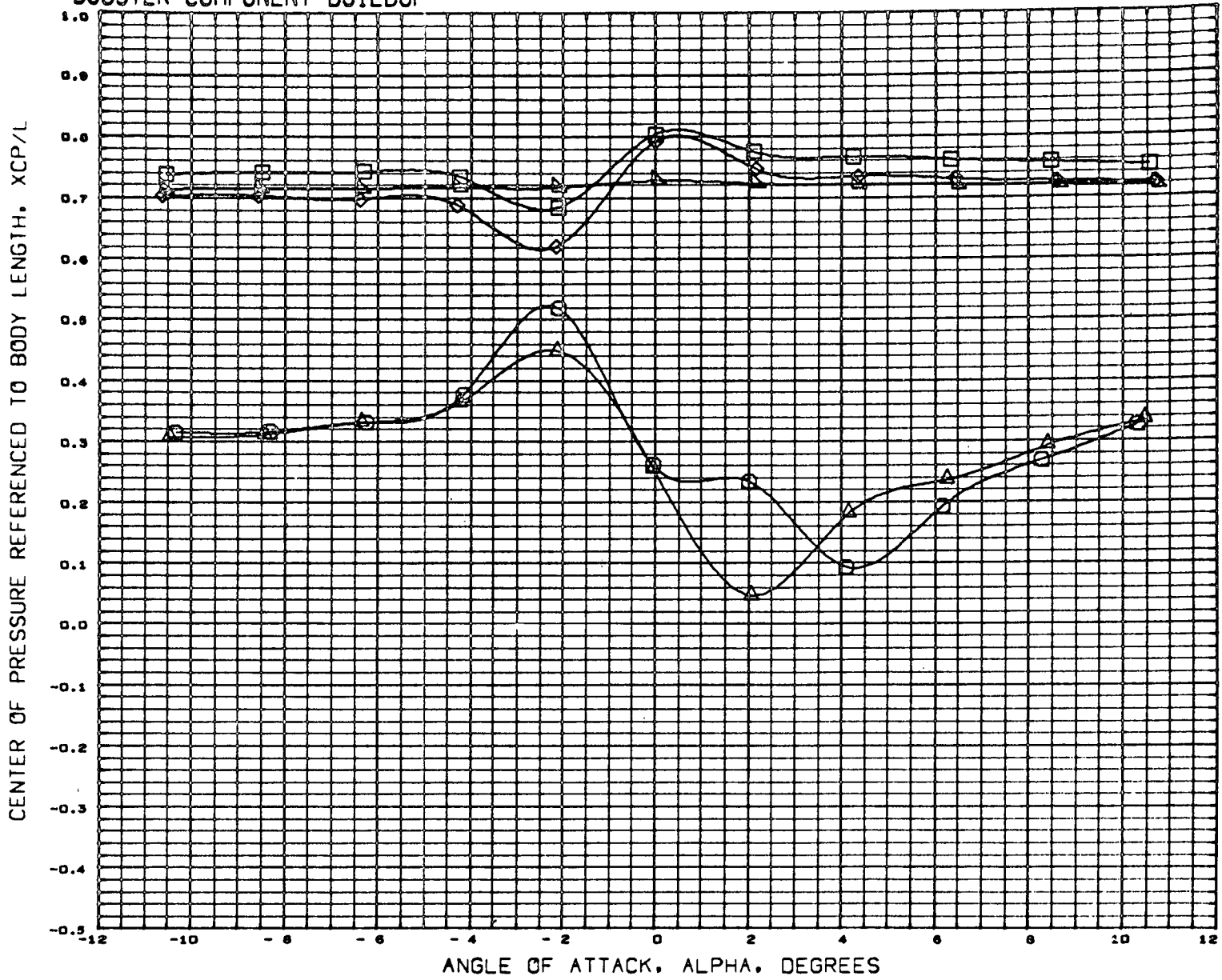


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(M3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(M3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(M3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.473

REFERENCE INFORMATION		
SREF	15.6560	90 IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER COMPONENT BUILDUP

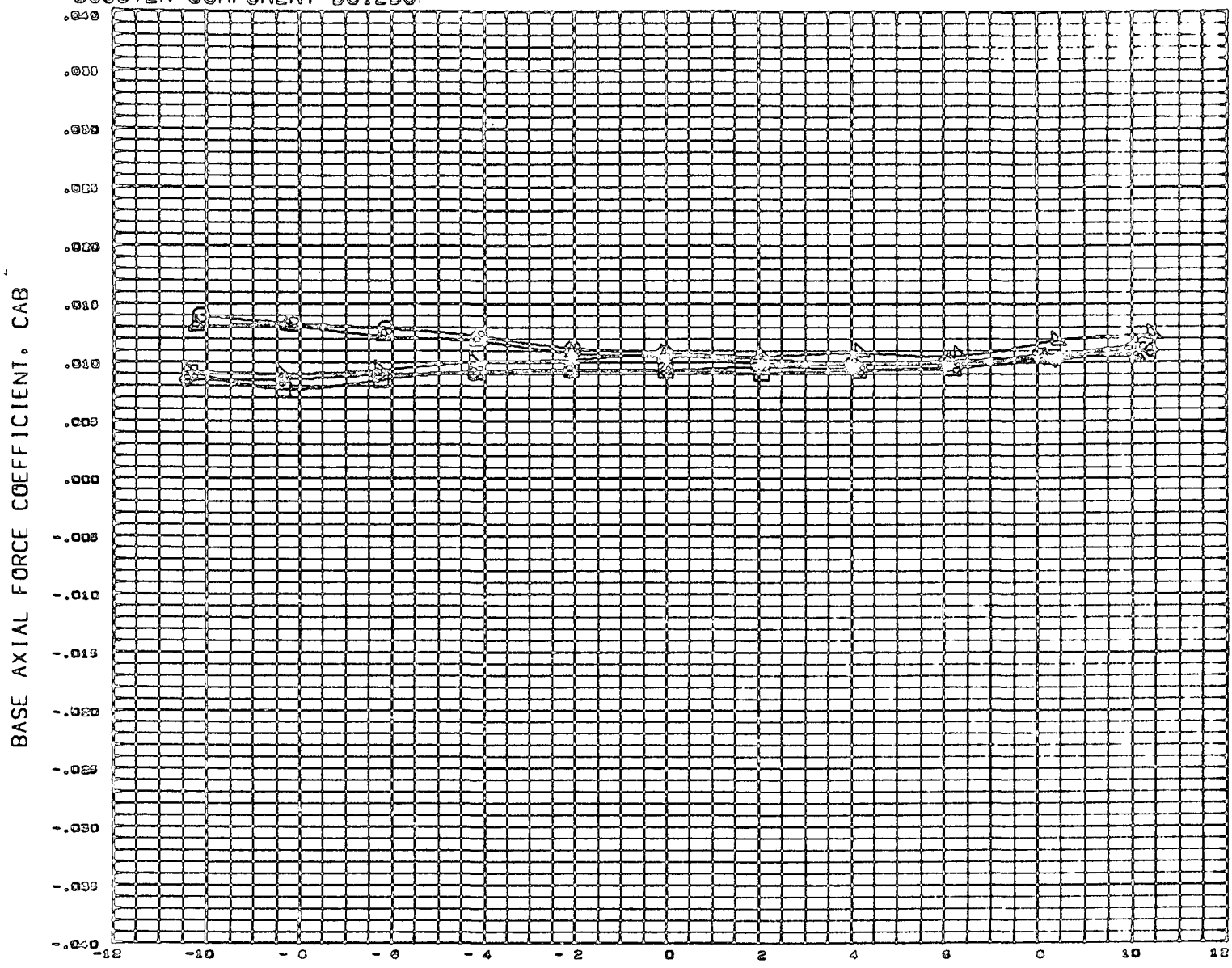


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.959

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(MB201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(MB202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(MB204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.600

REFERENCE INFORMATION		
SREF	15.6960	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
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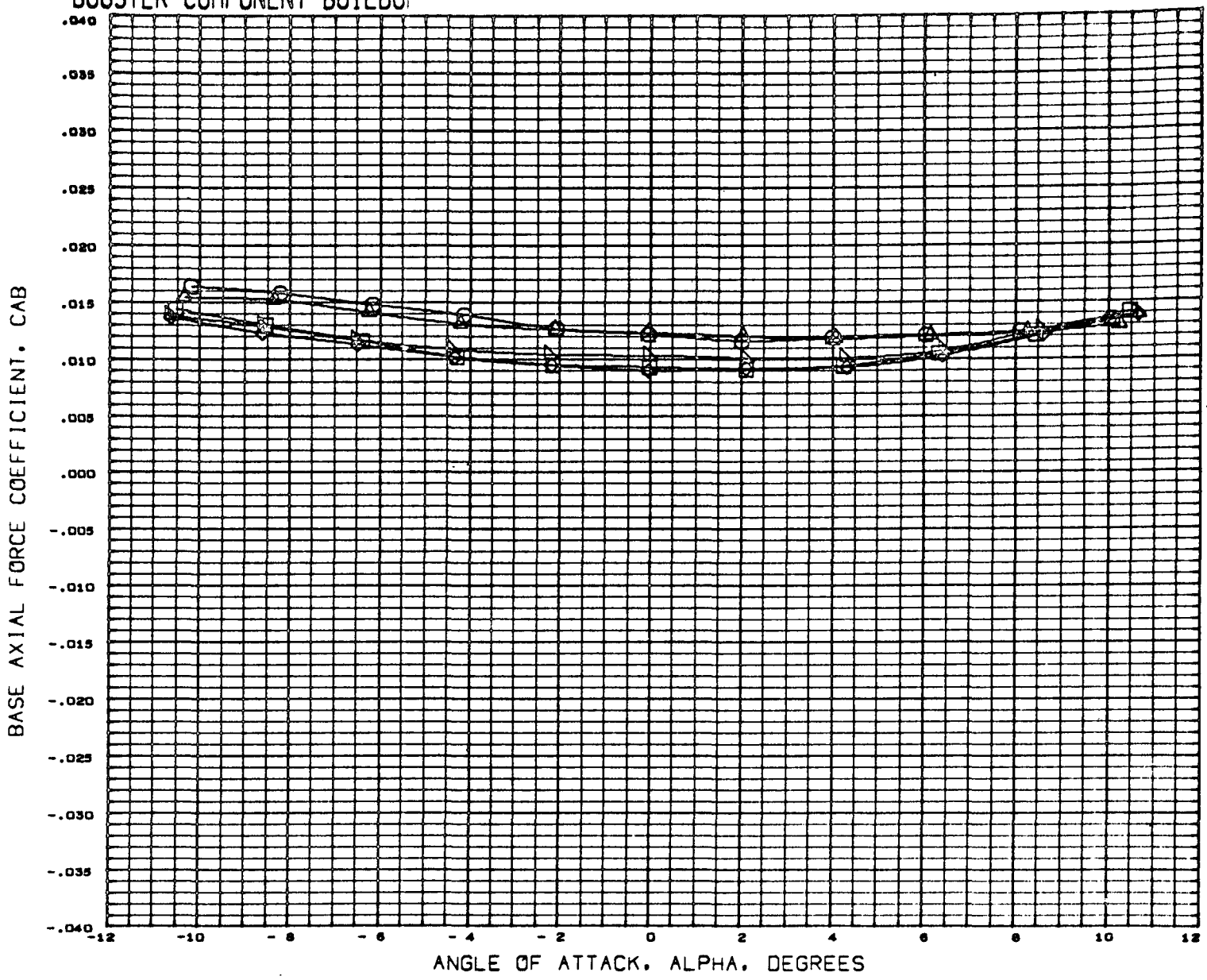
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP

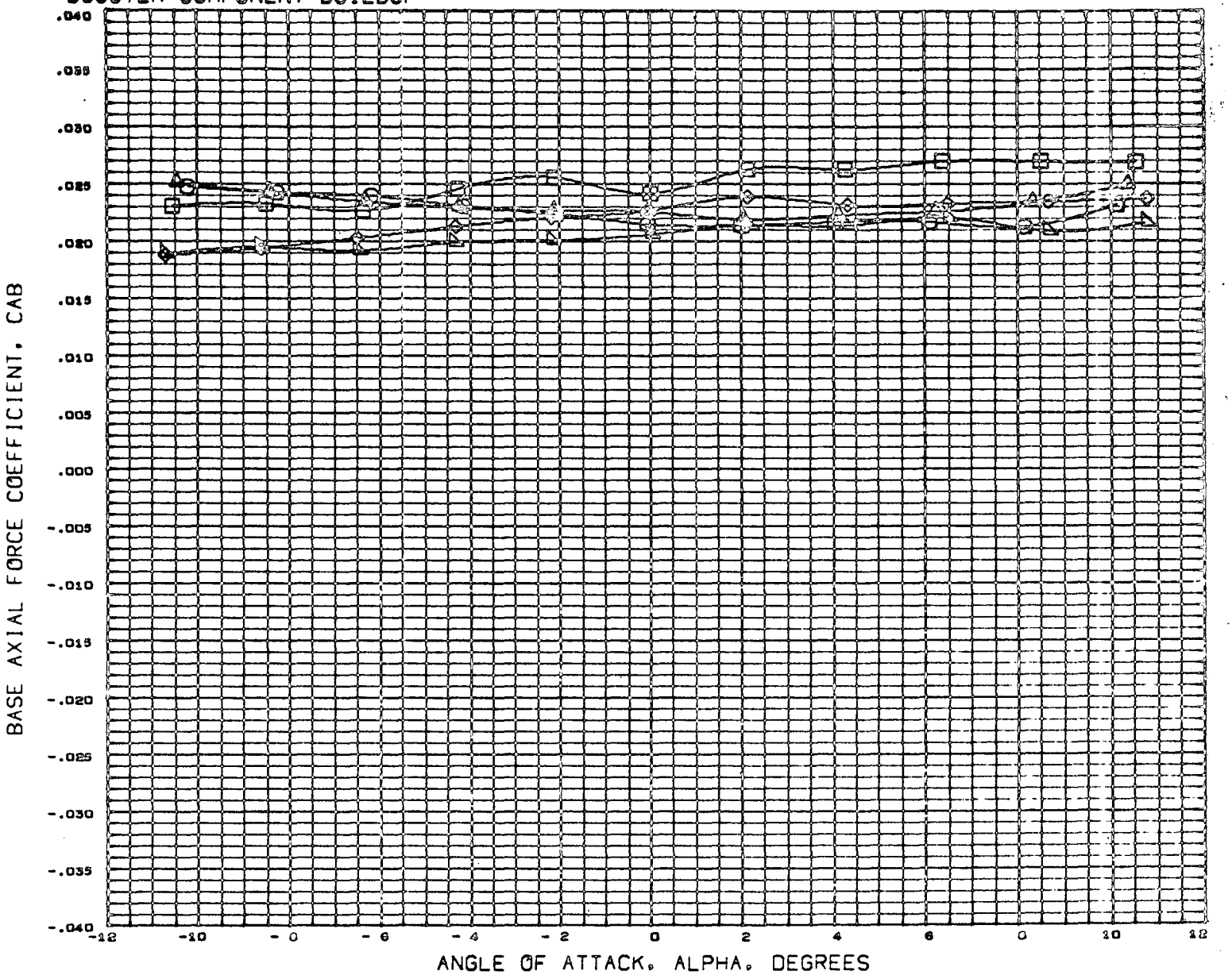


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 0.896

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP

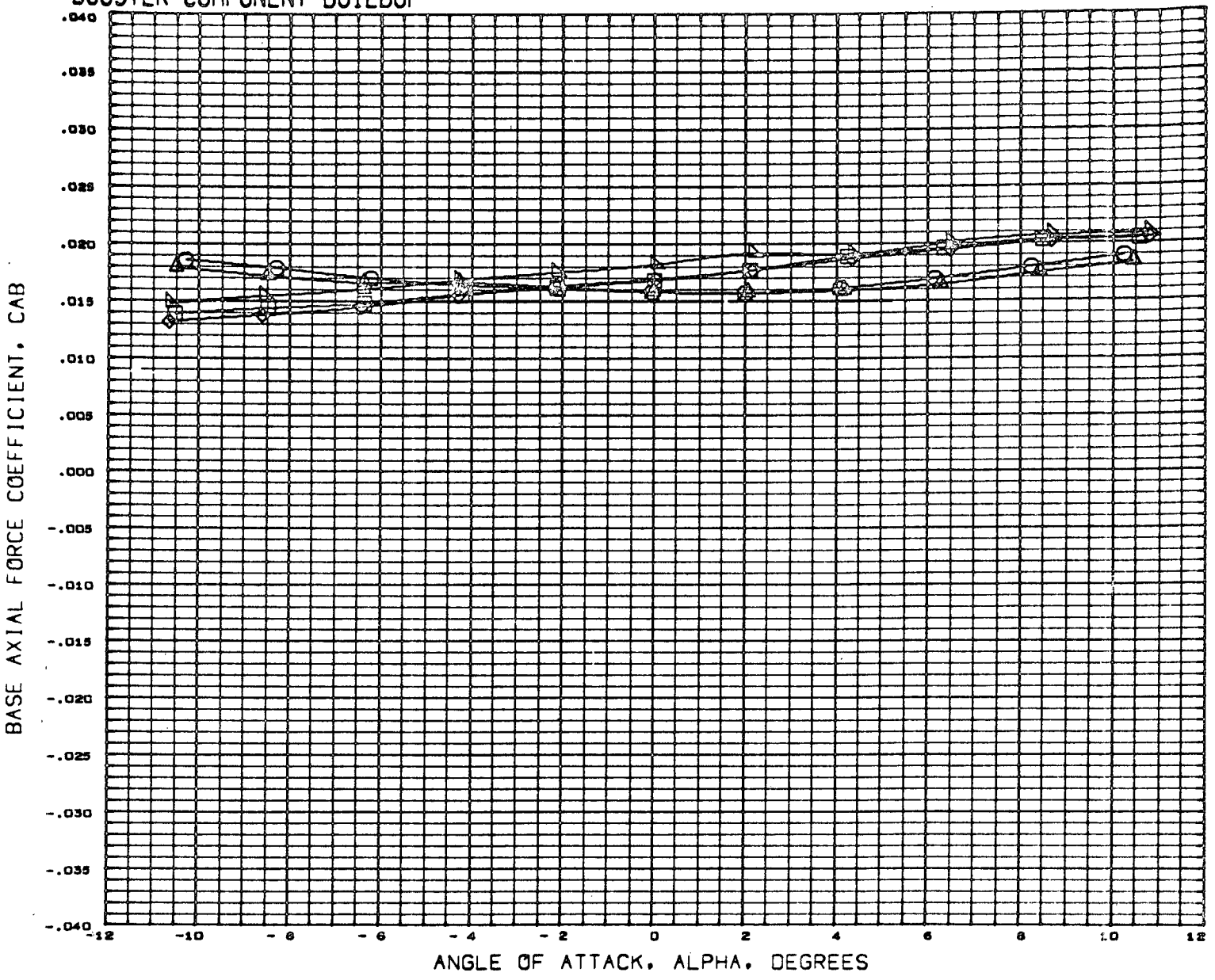


DATA SET SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)	MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)	MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)	MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.090

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0900	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE

BOOSTER COMPONENT BUILDUP

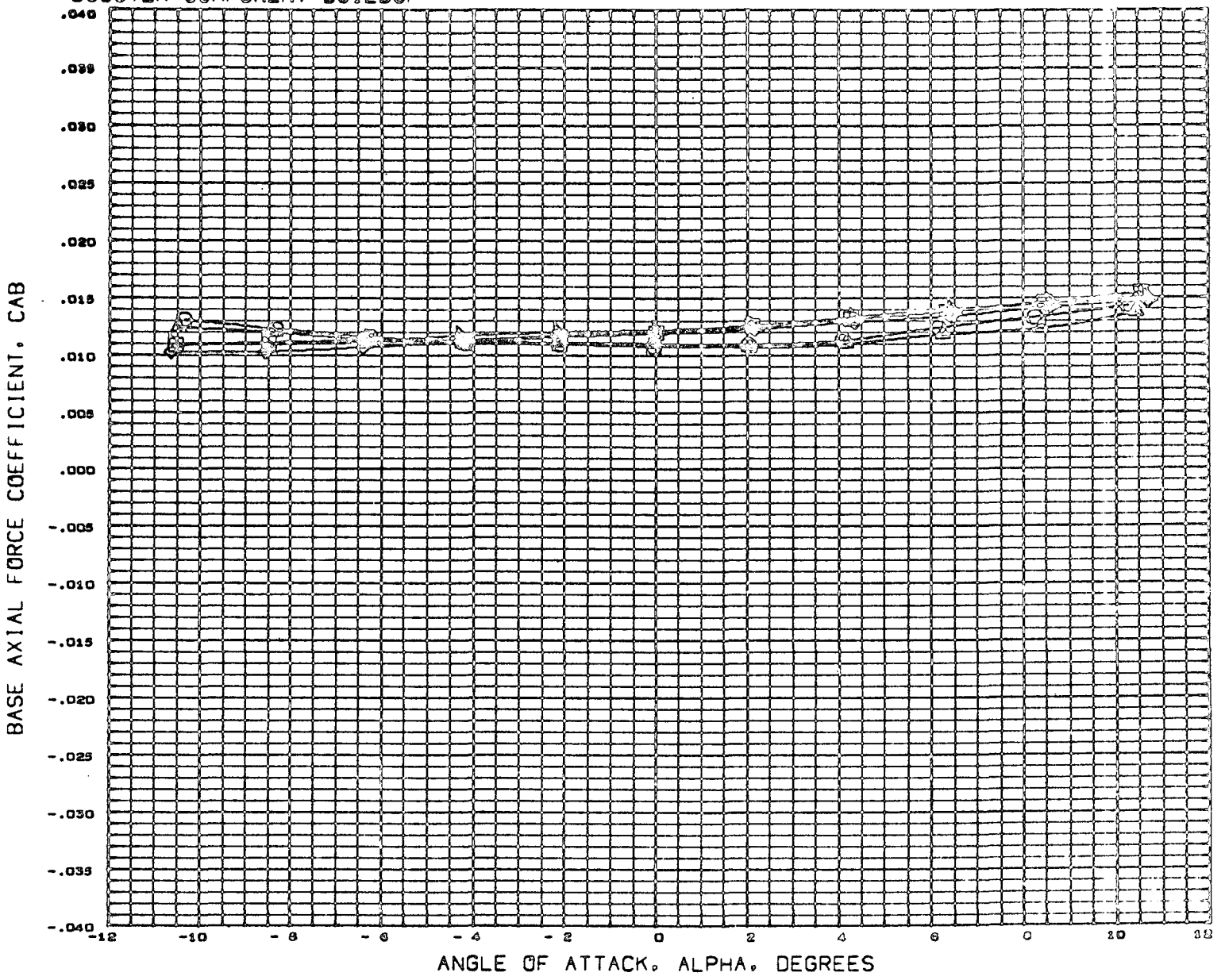


DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)	○	MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)	△	MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)	◇	MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)	□	MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)	▽	MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.473

REFERENCE INFORMATION		
SREF	15.6560	SQ IN
LREF	3.0950	INCHES
BREF	6.0990	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0035	SCALE

BOOSTER COMPONENT BUILDUP



DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	BETA	ELVATR	AILRON
(H3201A)		MSFC490 GD DELTA BOOSTER B20	0.000		
(H3202A)		MSFC490 GD DELTA BOOSTER B20C4B	0.000		
(I3203A)		MSFC490 GD DELTA BOOSTER B20C4BW14	0.000	0.000	0.000
(H3204A)		MSFC490 GD DELTA BOOSTER B20W14	0.000	0.000	0.000
(I3205A)		MSFC490 GD DELTA BOOSTER B20C4BW14V8	0.000	0.000	0.000

MACH 1.999

REFERENCE INFORMATION		
SREF	19.6960	50 IN
LREF	3.0000	INCHES
BREF	6.0000	INCHES
XMRP	0.0000	
YMRP	0.0000	
ZMRP	0.0000	
SCALE	0.0039	SCALE